University of Alberta

Screening Facility Site Selection Considering Environmental and Community Criteria, with the Application of Geographical Information Systems (GIS)

by

José Castellanos González ©

A thesis submitted to the Faculty of Graduate Studies and Research in partial
Fulfillment of the requirements for the degree of Master of Science
In
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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Screening Facility Site Selection Considering Environmental and Community Criteria, with the Application of Geographical Information Systems (GIS) submitted by José Castellanos González in partial fulfillment of the requirements for the degree of Master of Science in Environmental Engineering.

Daniel W. Smith

Daniel W. Smith

John Hodgson

Ian Buchanan

Ian D. Buchanan

SEP. 26TH, 2002

“Imagination is more important than knowledge."

Albert Einstein

"Effort only fully releases its reward after a person refuses to quit."

Napoleon Hill

“If you don't stand for something, you'll fall for anything."

Michael Evans

Abstract

In recent times, despite the great technical and methodological advances in the field of facility siting, there has been a decline in successful siting attempts for those facilities perceived as having deleterious effects in the environment. Most siting processes take into consideration physical or environmental criteria and ignore or fail to address public demands, characteristics, and present community conditions, contributing to the failure of the siting efforts. To create the adequate conditions for a successful siting approach, public awareness, public participation, and possible public opposition should be properly predicted and carefully considered in the siting process. The present study thoroughly investigates the facility siting process, taking into consideration environmental criteria as well as social and community factors. This study considers the siting of two facilities, a regional landfill and a regional airport in the County of Lethbridge, in the Province of Alberta, with the assistance of Geographical Information Systems (GIS).

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This Humble, but important work is dedicated entirely to my family in Mexico and in Canada

¡Por Mi Familia!

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1.0.0 Introduction

In recent times there have been enormous advances in the study and process of facility siting, especially for those facilities which are perceived as causing deleterious impacts in the areas surrounding their final location. New analytical tools and state of the art technology have been two of the most important factors in providing better understanding, and obtaining more reliable results when they are required in the decision making process. These factors have also contributed to improve the assessment and management of any type of impacts created by the facility under scrutiny.

The present trends in facility siting have made the siting process a more efficient and sensitive procedure from the natural, and social environment perspective. Today, it is required to foresee and consider all the possible implications and complications that a particular project could generate. The old notions of high economic profits without considering the detrimental impacts of a facility, in the surroundings areas where it has been located, are no longer acceptable. This situation creates a better allocation of resources mainly because only the best sites available to host a given facility are considered in the siting process. It is also inappropriate to use marginal land as a sole solution for the siting of "locally unwanted land uses" (LULUs). The employment of marginal land as the only resource for facility siting, without applying any methodology to determine whether it is the best option, can lead to unpredicted environmental damages.

The latest advances in the field of facility siting have been mostly inspired by the increasing public awareness in environmental issues, therefore, scientists, researchers and environmental managers have been pushed to create new methodologies in order to predict and provide better solutions to the facility siting dilemmas. Some of the technical tools frequently employed in finding the most suitable places to locate a facility are checklists, matrices, networks, map overlying, and geographical information systems (GIS).

On the other hand, as the siting process has become a more efficient and sensitive procedure, it also has grown in complexity and uncertainty. The present public awareness in matters related to the environment, combined with the way laypeople perceive the impacts created by LULUs, have generated a situation in which the siting process has become an increasingly difficult, and unfortunately, an often frustrating task. The process for locating the most suitable places to host a required facility has become a multiphase, and multidisciplinary course of action, in which the number of actors involved has increased considerably. Disciplines like sociology, statistics, engineering, geography, economy, and psychology have entered the fundamental technical core for facility siting studies.

The current intricate approaches to the siting process have produced attempts to locate facilities that have become increasingly difficult and very time consuming. Due to the great number of factors and participants involved in the siting effort, the possibility increases of having the number of successful cases diminish if the right steps and considerations are not appropriately taken into account.

As the siting effort grows in complexity, the specialists in charge of carrying out the whole siting process are becoming experts in the areas of environmental impact assessment and facility siting. This means creating a situation in which this type of professional is the only one capable of providing a better approach into the effort undertaken. These experts have to consider the specific characteristics of each case in particular, unify conflicting points of view, and apply the best methodologies to create a more favorable environment in the siting process. This kind of expertise can have as a major disadvantage that qualified personnel may not be readily available to tackle the enormous task of siting LULUs.

One of the most complex problems that faces environmental planners, and decision makers is the location of waste disposal facilities such as landfills and waste-to-energy plants that could have potentially harmful environmental effects. These facilities are a subset of a larger class of all potentially noxious facilities, which are denominated as LULUs. This type of facilities also includes water and wastewater treatment plants, affordable housing projects, prisons, roads, hospitals, airports, or any other facility that could create negative impacts in nearby areas. (Noble, 1992, and Lober, 1995).

Another great obstacle within the siting process is the way in which the general public understands or perceives the siting effort, its procedures, and methodologies. If the community perceives that there is certain degree of discrimination, people will consider that the process is biased, and that an enormous injustice is committed towards them. In present times, public resistance has been the most influential cause for unsuccessful facility siting projects. The main reasons for public unrest are attributable basically to two major factors, the lack of technical knowledge by laypeople and the lack of sensitivity by proponents and authorities towards the needs of the community or communities that will host the proposed facility. The path for reaching a beneficial agreement under the circumstances where there is a great degree of public opposition cannot be easily achieved. Negotiation for siting a facility under an antagonistic environment can only condemn the facility effort to a premature failure.

Constrained by a multitude of restrictions involved (i.e. environmental, legal, social and technical), finding the most suitable areas for siting LULUs has become an increasingly difficult endeavor. Because of this situation, environmental managers need to find the most effective and reliable mechanisms to detect and examine the factors that can affect a successful siting process. GIS systems, which are methodologies designed to analyze and evaluate information based on geographic locations, have become one the most important tools available to deal with the multiple concerns associated with the siting effort. GIS systems can be an excellent analytical tool for the realization of this objective.

In order to determine the most suitable location for any facility with perceived detrimental impacts, a series of environmental and social factors have to be taken into consideration. Environmental criteria can be described as the criteria that relate to the physical or tangible features of the area under study (i.e. rivers, lakes, towns, cities, recreational areas, archaeological sites, etc). The social or community criteria refer to those abstract characteristics or demographic particularities that best describe a group of individuals, or a community in particular (i.e. age, gender, economic status, rift or division in the community, etc.), this class of criteria also includes the form in which people perceive the possible impacts created by the facility that needs to be located.

As will be discussed in latter chapters, several previous studies have made important contributions to analyzing the repercussions created by environmental criteria in siting attempts, some others try to go a little further and evaluate the possibility of using some social criteria as potentially influential factors in the analysis. Unfortunately, neither of the two kinds of studies make a serious effort to integrate the two types of criteria into one comprehensive study that could explain the existence of some of the negative characteristics of facility siting.

The significance of this study is in examining the amalgamation of the environmental and social criteria into one concrete and comprehensive analysis. This study also strives to identify some of the social criteria that can be of special importance for the region under study and which can be considered in this investigation.

GIS is utilized as the main tool to integrate the social and the environmental criteria in the present siting analysis. The use of GIS not only helps to find the most suitable areas for siting the facilities selected in this study, a regional landfill and a regional airport, but it also produces an approach that examines the trade-off between the importance of the different criteria employed. Additionally, preventive measures are considered in two of the scenarios created in order to demonstrate that GIS is also capable of improving the decision making process.

The present investigation undertakes the difficult tasks of trying to deepen our understanding of the facility siting process, generate new findings, and bring some light into the difficulties that originate with this interesting, but also extremely complicated topic.

2.0.0 Literature Review

2.1.0 Facility Siting in the Risk Society

In the modern risk sensitive society, concerns over social, cultural, economic, and environmental issues have provoked an increasing community awareness of, and aversion to facilities that are stigmatized as creating deleterious impacts in the surroundings. Ali (1999) explains that the basic concept of the risk society is based on the idea that during the recent past the industrial social welfare was primarily focused on the distribution of goods (i.e., wealth, property, consumer goods, education, incomes, etc.). Throughout this initial period of modernity, industrial risks were already present, but were mostly regarded as the price for progress; therefore, the tolerance to these risks was strengthened by the economic prosperity of those times. In contrast, in recent times greater attention is beginning to be paid on the distribution of the risks produced by the industrial production. As a result, we now live in a risk society in which the once underlying risks or side effects of industrialization are increasingly being confronted by a raised public awareness of risk. With this increasing risk consciousness, a growing movement of public opposition is opposing technical and political decisions. For all the previous reasons, a risk society can be defined as the one in which public demand guarantees of protection from environmental and health risks, but unfortunately they cannot be realistically achieved.

In the contemporary risk society, the types of risks that are now confronted by the population are created by its own decisions (i.e., chemical pollution, and the greenhouse effect). Hence, the crucial characteristic of modern risks is that they are attributable to a decision maker. This particular attribute generates a situation in which individuals potentially affected by the decisions taken now try to be involved in the decision making process (Ali, 1999). Because of all these circumstances, the existing management of environmental issues has launched a reopening movement of the previously closed way of generating scientific knowledge, restructuring it to fulfill social demands.

Environmental risks or impacts, together with their health impact repercussions, are the major concerns in our society. This situation is mainly due to the nature of modern risks. Although we now confront global risks that are no longer socially, physically or temporally constrained, they are not prevented from having a time, space, or social class dimension. At the present time the effects of contemporary risks are much more extensive in both, society and health (Ali, 1999).

2.2.0 The Siting Process

The search for adequate and suitable sites, that will place or receive LULUs, could be a difficult and sometimes frustrating task. It is inadequate to choose as the unique solution the use of marginal land in order to siting facilities that are seen as LULUs. The employment of marginal land as a sole resource for facility siting, without applying any methodology to determine whether is the best option, can lead to unpredicted environmental damages. In order to determine the most suitable location for any LULU, environmental and social considerations have to be taken into account, therefore, environmental managers need to find the most effective and reliable mechanisms to detect and analyze the factors that can affect a successful siting process.

The need for siting new waste disposal facilities (as a consequence of the increasing amount of solid wastes required to be disposed off); combined with the everyday tightening role of environmental regulations and public awareness, create an increasingly complex situation, in which more consistent and reliable methods for site selection and decision making are required (Reams and Temple, 1995; Siddiqui et al., 1996). Siting a landfill requires a substantial evaluation process in order to pinpoint the best available disposal locations that could meet the demands of present guidelines and regulations, and minimize environmental, economic, health and social costs (Siddiqui et al., 1996).

2.3.0 Points of View Regarding the Siting of Hazardous Facilities

2.3.1 Socio-cultural and Political Notions

Finding sites to host hazardous waste disposal facilities has become progressively more difficult as a result of community resistance to the siting effort. In fact, certain degree of hostility toward the siting of any facility perceived as a LULU must be evident.

In present times, community residents and local governments demand more control and influence in the selection of suitable technologies, and during the process used to decide whether a facility should be sited or not. Siting hazardous facilities is a long period process in which planning and implementation must be carried on well past the construction phase. During that period there can be several environmental, social, political, technological, environmental, cultural and procedural considerations that can potentially bring the facility effort to a halt.

For example, Kuhn and Ballard (1998), explain that 'notions of power' is the greatest problem in siting a facility, and provide details about several hazardous facilities siting efforts in Canada. Attempts in Ontario and British Columbia failed because both processes tried to ensure human protection by attempting to find the best site from the environmental perspective, and to inform the public after a specific site was found. Accordingly, successful siting approaches in Alberta and Manitoba employed a methodology in which social and political characteristics were included early in the process to ensure acceptability in the communities, and as a secondary objective they incorporated environmental safety.

In other scientific publications, Zeiss and Lefsrud (1995, 1996) present the key differences between a successful attempt of locating a hazardous waste facility in the community of Montcalm, Manitoba, and a failed attempt to locate a Municipal landfill for the City of Edmonton in Alberta. The main differences observed by the authors between the two cases were the absence of a comprehensible need definition, the brief facility planning, and the lack of public involvement in the early stages of the siting process in the specific case of the municipal landfill.

The siting problem may consist of two different dimensions as explained by Hirschhorn (1984). For most communities, and for most people and local government administrators, the siting of hazardous waste facilities is seen as a local issue and an immediate risk to their health and safety. Respectively, for the majority of industry representatives, and for provincial or federal government officials, the public opposition posture to siting hazardous waste facilities is perceived as an unreasonable obstacle to maintaining industrial activity and achieving socially desirable management of hazardous wastes.

Hazard levels as well as health and environmental effects of hazardous emissions have a great degree of scientific uncertainty. In essence this situation is created as a result of the heterogeneity and enormous quantity of hazardous materials produced. Another possible explanation is that the scientific validation of risk assessments is best suited to certain areas, incidents and wastes, of which there can be a large number in a specific region (Kleindorfer, 1986).

If public opposition were the main reason for a difficulty in hazardous waste facility siting, then the basic issues would be the lack of public thrust, and the fear that a hazardous waste facility would create unacceptable conditions for health and well-being. Under these circumstances, the real problem for the participants, on the opposite side of the siting process spectrum, would be to convince the public not only to accept the facility in their community, but also to repair their confidence in regulators and their programs, and in the industry's desire to comply or even surpass established regulations (Hirschhorn, 1984; Elliot, 1984).

2.3.2 Economic Notions

Pushchak and Rocha (1998), declare that part of the answer to public opposition can be found in the economics of hazardous facility siting. From an economics point of view, hazardous wastes are usually seen as a negative externality generated by the manufacturing process. In a market economy, goods are produced because their values to consumers exceeds the costs to producers supplying them, but if there are costs associated with the production of a good that are not manifested in the producers' costs, an externality arises, and this has as a consequence an inefficiency in the market.

The achievement of finding a voluntary site relies on the degree to which the costs of risks can be internalized. Compensation can be paid to make up for the impacts present in the community when the external cost is small. However for hazardous wastes in which the value of external costs to the community is alleged to be very high, especially in a voluntary process in which communities are free to value risks to health and safety, it is common that, the external costs would be greater than the benefit of the product. Therefore, unless the residents feel protected from unacceptable risks, the costs produced will obscure any possible gains obtained from hosting the facility. Given these circumstances, internalizing the risks generated by hazardous waste could lead to a situation in which the most favorable amount of goods that generate the waste would be zero, because the maximum price that consumers would pay for the product would be less than the cost of producing the good plus the externality costs of siting hazardous waste disposal facilities (Pushchak, and Rocha, 1998).

Young (1998) describes the study undertaken to evaluate potential socio-economic impacts associated with prison siting. This research tries to determine significant public perceptions, in two communities near correctional centers, about the impacts of the prison in relation with fear of crime, the impact of the facility on the regional economy, impact on security of residents, and impact of the prison on the aesthetics of the community. The results of this study show that residents living proximate to prisons do not have negative perceptions towards these facilities. Meanwhile, projected building of new facilities is often confronted with severe public resistance due to the perception of fear and distortion of the information about the operations of these facilities.

2.3.3 Managerial Concept

Elliot (1984) maintains that an oppositional behavior to the siting of hazardous waste management facilities is created, in part, as a consequence of conflicting perceptions of how best to manage the risks associated with hazardous wastes. In general, people strongly prefer risk detection and mitigation approaches to prediction and prevention methodologies for managing the hazards associated with waste treatment facilities. Similarly, most people prefer plans that reinforce public control mechanisms to those that support technological control mechanisms. This point of view differs significantly from that of Zeiss (1994), and Zeiss and Lefsrud (1995, 1996) in which people perceive impact prevention, control and mitigation as more preferable measures than compensation actions.

The situation presented by Elliot is formed as a result of comparing prevention technologies (which can be delineated in a more precise manner and are more difficult to change once construction is finished), with detection, mitigation and managerial systems.

Management can be an unpredictable and uncertain process in which improper execution can greatly increase the danger of mishaps associated with hazardous waste facilities. Furthermore, risk awareness depends not only on the strategy selected to manage risks but also on the reliability of its implementation.

2.3.4 The Role of Technical Information and Risk Communication

Technical experts and technical information play a major role during the facility siting process (Zeiss, 1997). Technical experts make sure that the crucial information is used in the different phases of the facility sitting process (i.e., design, operation, impact assessment and information of stakeholders). This technical information should be presented to the involved parties within a necessary content format, scheme, and at the most appropriate time to prevent endanger the whole process by creating a situation in which stakeholders focus their attention to unimportant facts and overlook significant issues.

Zeiss (1997) considers that two main approaches are used in the waste facility siting process. The conventional siting process, which has the following steps: (1) facility need, (2) choice of site and technology, (3) facility design, (4) impact assessment, (5) impact reduction, and (6) implementation as construction, operation and monitoring. And the negotiated siting process, which comprises six topics with the intention of achieving durable and consensus based decisions. The six stages are, (1) identification of stakeholders and interests, (2) definition of the problems and needs to be addressed and solved in the process, (3) determination of rules, goals and objectives, (4) evaluation and selection of alternatives, (5) distribution of tasks and implementation of arranged activities, and (6) outcome.

The conventional siting process is seen as requiring greater technical involvement during the stage of problem and need definition. Technical information is used further in the process to validate the selection of the site via technological or impact mitigation measures. Normally, technological information cannot define the main goals of the siting process. Under these circumstances, the siting effort is frequently ineffective, and residents tend to validate their oppositional views by using the technical information provided. In contrast, the negotiated process focuses more of the technical information in describing the present problematic, in defining the needs, goals, siting criteria, technological choices, and the impact and mitigation actions. This situation, together with the early involvement of the main stakeholders in the process, can generate better conditions for a successful facility siting effort.

Risk communication can also be a key component of any successful project involving public perceptions of high risks (Slovic, 1980; Stewart, 1990; Noble, 1992; Kurland, 1992). Environmental managers, planners and proponents have a large array of communication methods to create liaisons with host communities. These methods can be grouped into three main streams: community-based, government-based, and court-based strategies (American Planning Association, 1993). Concessions and incentives to the community, community education, community outreach, and community advisory boards are some of the strategies included in the community-based category. Meanwhile, local licensing regulations, zoning, mediation, and civil rights are part of the government-based approaches. Court-based strategies are employed when there is the necessity for some type of legal action; but in general, courts should be avoided as much as possible; lawsuits are expensive, long, and often result in negative consequences for the objective of community integration.

2.3.5 Equity Concerns

An increasing body of research on facility siting reveals that poor communities and minority groups are often targeted to bear a disproportionate part of the costs and risks associated with municipal waste disposal facilities. Studies have found that communities with a greater proportion of minorities are more prone to be selected as locations for commercial hazardous waste facilities and uncontrolled toxic waste sites (Reams and Templet 1995). Academics (Reams and Templet, 1995), explain that the present tendency to site LULUs in communities with greater proportion of poor and minority population can be due, first of all, to the political powerlessness of the poor and minority communities, second, to the greater vulnerability of poor and minorities to short-term economic gains associated with LULUs, and finally, another possible cause of inequity can be generated by the housing market because of racial segregation. The variety of explanations for environmental inequities suggests that the problem is very complex.

Identifying areas of high population density, and then locating a facility far enough from these areas can be appreciated as a measure of equity. This approach gives greater rights to higher population densities than to lower population densities, where rights are defined to be the avoidance of living near potentially harmful facilities. Although, the mentioned approach can be considered to be a helpful one, it is not coherent with another notion of equity based on the recognition of minority rights. This characteristic can be resolved by treating each residence as having the same rights, and identifying a potential area that is sufficiently far from all residences (Lober, 1995).

Several other implications can be derived from research studies. Lober (1995) explains that the degree of attitudinal public opposition is greater than the behavioral opposition stance towards a recovery and recycling facility, and that the behavioral measure of opposition decreases rapidly when distance from the facility is increased. Some other results from the research indicate that attitudinal opposition does not decline as fast with distance, and that living closer to an access road or a proposed access road gives the impression to cause a greater impact on oppositional behavior than on attitude.

These findings identify that attitudes may differ significantly from behavior, therefore the long used practice of predicting behavior through attitudes should be reconsidered.

The inequitable distribution of risks is also a major factor in the majority of siting processes. A facility may benefit the broader spectrum of the community or region, but it can be recognized that an injustice is taking place when a disproportionate distribution of the risks is placed on some areas and not on others. As has been described in scientific publications (Kunh and Ballar, 1998) the public's perception of fairness in the decision making process effectively toughens their attitudes. If people perceive the policies or the siting process as unfair they respond in a "not in my back yard" (NIMBY) manner. But sometimes, people's perceptions and reactions concerning site selection proposals are not always negative; residents of a given community can observe potential benefits from hosting a LULU in certain cases, for example, during an economic downturn or depression.

The views in connection to fair approaches in facility siting are described by Vari (1996). The approaches can be classified as (1) the technical, (2) public participation, (3) market and (4) distributive justice. In relation to the technical approach, decisions are based greatly on recommendations given by specialists while public involvement in siting decisions is undesirable. On the other hand, the public participation methodology stresses the significance of contribution in the siting process by all concerned groups. The market approach consists of giving the liberty to host communities to negotiate certain benefits for hosting the facility. The distributive justice method, conversely, expresses that benefits and costs should be distributed as evenly as possible over the whole population. These views can also be coupled with various competing distributive principles of fairness consisting of parity, proportionality and priority.

Some other views of a fair approach to siting LULUs are the following: the technical hierarchical, which consist of strong reliance on technical criteria, a strict local government authority and limited public participation. The individual rights approach which transfers decision power to the affected communities. And the distributive justice approach that is based on the opposition side of the individual rights approach because it leads to siting facilities in unprivileged communities.

2.4.0 Factors and Impacts that Influence the Siting Process

Causes for community opposition associated with municipal waste facilities have been shown to be generated by political, ideological, social, demographic, physical and economic factors (Reams and Templet, 1995).

2.4.1 Political and Ideological Factors

Political and ideological factors are the issues that can affect the relationships between citizens and the governmental and economic systems. People and groups who feel alienated from the larger culture are more likely to resist the siting of new municipal waste facilities. This feeling of separation from the broader culture may arise from an array of situations, ranging from poverty to decline in public trust in the institutions that manage environmental risks.

2.4.2 Social and Demographic Factors

Social and demographic influences are those variables related to the status of individuals or group of individuals within the community. They can also be particularities specific to the individual for example, age, marital status, gender, etc. Some studies (Hunter and Leyden, 1995), have found that Individuals who are younger, better educated, in white collar occupations, have more years of residency, and live closer to the proposed site, are more likely to oppose the proposed facility. Likewise, a greater sense of belonging within the community generates more resistance to the facility.

2.4.3 Physical Factors

Physical factors are those variables that account for palpable impacts related to the distance between the facility and the community (i.e., traffic and visual impacts). This situation is more related to the NIMBY syndrome.

2.4.4 Economic Factors

Economic factors are those influences that explain community opposition based on the risk perception idea that LULUs will postpone or discourage future residential, commercial, or even industrial development, and that they will also generate property depreciation.

2.4.5 Other Factors and Their Implications

Research literature has revealed the existence of a vast number of variables that affect public attitudes and behavior (Slovic, 1980; Lober, 1995; Reams and Templet, 1995). Risk perception studies describe that the voluntary acceptance of a risk can be framed into several components, for example, newness of the risk, catastrophic potential of the risk, and extent to which the risks have been imposed on the community (Lober and Green, 1994; Lober, 1995; Reams and Templet, 1995). Public attitudes towards a facility can be affected by their trust in regulators and other involved parties, need for the facility, and knowledge of the technologies used (Slovic, 1980; Slovic, 1989; Kunreuther, 1991; Lober, 1995; Reams and Templet, 1995; Vari, 1996). Cultural variables such as hierarchical, individualist, egalitarian or fatalist ways of thinking can influence individuals' responses (Zeiss, 1994; Reams and Templet, 1995; Vari, 1996). Perception about fairness also can have an effect on the public resistance stand towards facility siting (Lober, 1995; Reams and Templet, 1995; Vari, 1996). Demographic factors such as gender, age, having children, level of education and income may also impact the decision of accepting a LULU in the surrounding environment (Lober and Green, 1994; Lober, 1995; Reams and Templet, 1995).

Adverse impacts from hazardous waste facilities can also emerge from two social processes, stigmatization and amplification of risks in relation with risk perception. Stigmatization refers to the public misconception associated with an accident or series of accidents that mark a specific technology, facility or community as undesirable entities. Subsequently, amplification of risks in relation to risk perception take place when public awareness for certain risks is augmented out of any realistic proportion. Massive media coverage of an event and political disputes can motivate risk amplification (Slovic et al., 1989).

Facility characteristics can also have a considerable effect on the future of the siting process, mainly because they have a direct impact on public perceptions, and additionally, because they are one of the few factors on which providers can exercise direct control. Usually, type, size, number, operations, appearance and reputation of the facilities influence community perceptions (American Planning Association, 1993, and Zeiss and Lefsrud, 1996).

Hine et al. (1997) explained that in a study carried out in Canada, residents of four northern communities were surveyed to evaluate the degree of resistance from aboriginal and nonaboriginal respondents towards siting a proposed nuclear waste repository. The findings indicate that the majority of the respondents showed that they were moderately to strongly opposed to siting the repository in or near their communities, and that they would vote against the repository (73 % of the sampled individuals) in a local referendum. The analysis revealed that trust in nuclear regulators, faith in science and technology, and anticipated net costs were important mediating cultural variables in this effect. The percentage of opposition was strongest among aboriginal respondents. Aboriginals were less trusting of nuclear regulators, demonstrated less faith in science and technology, and perceived the costs associated with the repository to be higher than the non-aboriginal population. Another important outcome from this study is that no support was found for the hypothesis that financially vulnerable individuals would show greater support for the facility than financially secure individuals.

2.5.0 Facilities and Property Values

Zeiss (1996) described the basic causal connections between LULUs and property value impacts. The author expressed that in order to have the occurrence of a substantial property value impact there must be a comprehensive causal connection between the LULU and the characteristics of affected properties. The study explains that the main components for a simple cause-effect relationship between a LULU and property values are: (1) all facility activities including site selection and announcement, construction, operation, emergencies, failure and decommissioning; (2) the exchange of undesired and desired outputs between the facility activities and the surroundings; (3) impact propagation as transport dispersion and fate of outputs; (4) receptor exposure; and (5) residents' perception and evaluation of the effects of property attributes.

For property impacts to happen, there must be two essential conditions present: (1) the facility must generate undesirable outputs that spread through the environment and cause considerable exposure to residential properties; and (2) the entire group of sellers and buyers in the market must perceive and evaluate the increasing exposure to undesired impacts.

This study also evaluated the possibility of impacts in properties adjacent to several groups of LULUs, and impacts. The groups of noxious elements consisted of: (a) nuclear power and radioactive waste, (b) waste disposal facilities, (c) airports, (d) roads, highways, and railroads, (e) air pollution, (f) water pollution, (g) visibility, (h) buildings and developments, (I) landslide, earthquake and flood zones, and (j) electrical power plants and transmission lines. The result obtained reveal that nuclear power plants, waste management facilities, buildings, electrical power plants and transmission lines cause inconsistent property value impacts, that they are characterized by medium to high perceived risks and also by numerous and elaborate physical and socio-economic impacts. Airports, highways, natural hazards, air pollution and visibility impacts, consistently generate property value impacts, create clear physical impacts and have low risk perception.

2.6.0 The "Not in My Backyard" Phenomenon

2.6.1 The Role of Public Opposition

One of the problems that plays a major role in the facility siting process is the rising of manifest public opposition from local residents; this problematic event is also known as the NIMBY Syndrome. As describe by Lober (1995), such opposition may well be the single greatest obstacle to successfully site LULUs. The NIMBY phenomenon often displays a greater visibility, energy and political effect by means of mass behavior instead of using public opinion.

Opposition can be defined as the sign of a rational answer by individuals who perceive an imbalance between the benefits they will receive from accepting a facility (i.e., tax revenues, jobs, etc.) and the costs they will have to bear (i.e., health and environmental risks, traffic, odor, noise, etc.) (Lober, 1995; Lober and Green, 1994). Basically, NIMBY refers to public that benefits from the advantages of technology, but refuses to pay the costs associated with having a facility in the proximity (Hunter and Leyden, 1995, Lake, 1993).

However, there is not a comprehensive agreement about the actual causes of these opposition views. The NIMBY syndrome is commonly used to label people's oppositional attitude towards siting a LULU. One of the main problems with the employment of the NIMBY term is that it can vary in definition among researchers. Some of the possible causes for a NIMBY situation can be based on distrust in science and technology, a lack of trust in proponents or government regulators, and public misinformation. Other approaches stress that the NIMBY factor can be generated by concerns regarding the quality of life (Tener, 1996), property values, aesthetics, and health or safety risks (Brown, 1997; Stein, 1996). A faulty siting process can be among the main causes for the NIMBY condition to occur (Lober, 1995; Hunter and Leyden, 1995).

Nevertheless, community opposition toward LULUs can be far more complex than the possible implication of the NIMBY characterization. In other words, proponents and regulators need to be more conscious of the issues and concerns exhibited by the public and find the proper methodologies in which they need to be addressed. In most cases, trying to discredit real fears by labeling them as "personal interested NIMBYism" will probably provoke a greater radicalization of their posture (Hunter and Leyden, 1995).

A self-interest attitude, as mentioned by Lober and Green (1994), is the one that functions as the means to the attainment of valued goals for the individual. In this definition, the meaning of goals is limited only to those that are directly implicated on the material well-being of the individual's private live in relation with their financial situation, health, address, family's well-being, etc. Research in public opinion has found consistent results that policy opinions from individuals do not seem to be correlated with their own personal interests (Lober and Green, 1994).

The relationship that exists between the distance from the LULU to an individual's residence and the intensity of opposition toward this facility is one of the numerous empirical connotations when studying the NIMBY phenomenon. Perceived benefits and costs due to the facility can be strongly associated with distance, consequently, a greater distance from the LULU results in a reduction of perceived risks or costs.

Oppositional conflicts seem to follow a three-stage sequence, the primary phase is called "Youth" and begins when the initial announcement of building the proposed facility is given to the selected host community, igniting the conflict with this action. The second step, "Maturity", occurs when the dispute is relocated from being private complaints to public debates, and when the conflict parties harden their positions and try to obtain greater support. The final stage, "Old Age," consists of the period in which professional or political resources are employed. Usually, at this phase some kind of arbitration process is put in practice (American Planning Association, 1992).

2.6.2 Explanation from the Economics Perspective

From the economics perspective, the NIMBY syndrome produces an inefficient allocation of resources since the economic and psychological external costs of a LULU are created in the vicinity of the facility, despite the fact that the benefits of a LULU are disseminated globally throughout the economy (Groothuis and Miller, 1994).

Laker (1993) claims that the NIMBY characterization is not the one to blame for the societal inability to eliminate environmental degradation, transportation overcrowding, homelessness, crime and poverty; he explains that LULUs are needed not by society but rather by capital and by a state determined to reproduce the capital-labor liaison. The current and increasing community opposition is causing a crisis of legitimization followed by a situation in which the state is forced to redirect the costs of policy involvement away from the communities and back onto capital, in other words, away from the siting of LULUs and more towards solutions requiring concessions from capital. The author also affirms that it is reasonable to expect that state intervention favors capital at a cost to community. The political alternative to label NIMBY as an irrational, parochial, misguided, egoist and obstructionist movement, is based on a pre-deliberated situation in which it is easier to criticize NIMBY than to confront capital. And in the political arena the outcome is even more shocking, for the government it is simpler to condemn NIMBY than to try to give a solution to the source of the problems.

2.6.3 NIMBY Variations

Academics have created other terminologies with the intention to explain variations of the NIMBY syndrome, for example the connection between citizens' opposition and the politicians' behavior in favor of this resistance has been named as the "not in my term of office" or the NIMTOO phenomenon (Yarzebinski, 1992; American Planning Association, 1993).

Another public resistance posture with more radical connotations is the one that opposes siting any facility anywhere and that cannot be related with distance. This stance can be identified under several terms, NOPE (not on planet earth), NIABY (Not In Anyone's Backyard), and BANANA (build absolutely nothing anywhere near anyone) (Lober, 1995).

The NIABY opposition stance suggests that some factors, other than those related to self-interest, can shape siting preferences. Notions of equity, together with its procedural, distributional and intergenerational components, can be seen as one such factor. Specifically, distributional equity turns out to be a growing participant in the public reaction toward siting waste-disposal facilities, concerning to this condition, studies show that a disproportionate number of hazardous facilities have been located in poor, rural and minority communities, often seen as an unfair behavior (Greenberg and Hughes, 1993; Lober and Green, 1994; Reams and Templet 1995; Vari, 1996). Occasionally, prejudice and discrimination are concealed factors that create public opposition toward certain land use developments for example, drug rehabilitation centers, homeless shelters, and institutions for mental and physically challenged individuals (American Planning Association, 1992).

2.6.4 Characteristics of NIMBYism

Several attitudes, frequently related to the NIMBY syndrome, were used as variables to study public oppositional reactions toward a hazardous waste incinerator in the State of Virginia, U.S. (Hunter and Leyden, 1995). The variables employed in this study are those that have been demonstrated to be related to opposition and/or defense toward different types of LULUs, and can be enumerated as follows: (1) how a person feels about the risks associated with a incinerator, (2) believe in government, (3) believe in other policy actors (i.e., military, environmental groups, big business), (4) income, (5) level of education, (6) age, (7) gender, (8) distance from the facility, (9) negative impacts on aesthetics and (10) property values, (11) personal knowledge of the technologies used, (12) political affiliation, three cultural variables identified as (13) hierarchist, (14) individualist, and (15) egalitarian, (16) division or rift among people in the community; and finally, a factor analysis that differentiates from voluntary and involuntary risks was introduced.

The results from this research reveal that personality or ideological characteristics give the impression to have some impact in relation to facility siting. People who perceived unacceptable high risks, and are anti-hierarchical, seem to be more opposed against siting a facility than those who are risk takers and with hierarchical personalities. Additionally, individuals who do not think the government or other policy actors listen to them as well as younger people and women (specially with children) (Lober, 1995) are more likely to oppose the facility. Community division or rift is one of the variables that can also play an oppositional role in siting efforts.

In addition to personal interests, individuals can also be motivated by attitudes such as fairness, sympathy, commitment, citizen duty, morality, and ideological beliefs; therefore, citizens who are not affected directly by the LULU can assume an attitude of opposition that reveals collective concerns (Hunter and Leyden, 1995).

Yarzebinski (1992) explains that implementing a successful process to offset the NIMBY syndrome can be most of the times an easy undertaking. Habitually, it is less expensive to develop and put in operation a meaningful public participation plan during the siting process than to have the project delayed or stopped.

In order to predict any possible initiation of public opposition, developers must take a look at previous experiences of facilities located nearby the potential host community, to the demographics and the past history of activism or conflicts in the community (Stewart, 1990; Kennedy P. and McCaughey, 1992).

2.7.0 Facility Siting Methodologies

2.7.1 Public Satisfaction Methods

The method that uses a sociological and political program is called voluntary siting. In this method the protection of the environment and human health become the main criteria of the site design and management, consequently paying less attention to the particular characteristics of the site (Baban and Flannagan, 1998).

2.7.2 Incentives Through Compensation

A market-based siting method permits residents of a specific area, where a facility site is projected, to accept this facility in return for financial compensation in which the amount should be determined by the public. In some instances this approach is considered to be nothing but a simple bribe (Kleindorfer, 1986; Baban and Flannagan, 1998). On the other hand, Inhaber (1992) argues that the method of using incentives (i.e., financial compensation) for accepting LULUs does not constitute a bribe, basically because it lacks three specific elements of this detrimental practice. First, bribery is only use in pursuit of an illegal act. Second, bribery is almost always done in an undisclosed way. And third, bribes always target an individual or group of individuals instead of the entire community.

Kleindorfer (1986) states that compensation and negotiation between the involved parties smooth the siting process. Compensation can be defined as the transfer of money or goods from developers or users of a LULU to those who are perceived as being adversely affected by the facility (Swartzman et al., 1985; Kleindorfer, 1986).

Compensation may be structured in three ways: (1) Ex ante compensation, (2) On going compensation, and (3) Ex post compensation. The first category of compensation takes place before the facility is built and it can be provided in the form of public facilities or a sum of monetary transfers. The second type occurs during the operational period of the facility and it can be in the form of usage taxes or surcharges imposed on the facility and its users. And the third form of compensation is materialized in the form of social or private insurance or clean-up payments in case of any accident resulting from the facility (Kleindorfer, 1986).

Swartzman, (1984) studied the possibility that residents might demonstrate a greater willingness to accept a LULU within their community when incentives are offered by the government or the proponent. The results of this investigation strongly indicate that offering compensation and risk reduction inducements to host communities can diminish public opposition towards the facility.

Negotiation, on the contrary, is the bargaining procedure among the affected groups and it can be carried out at two levels. The first level of negotiation, or also called the local level, involves negotiation between local authorities and those with an economic interest in the facility. The second level, or regional level, involves provincial, state or regional integration of the results of locally negotiated issues and putting in place a set of provincial-wide technical and procedural standards (Kleindorfer, 1986).

2.7.3 Authentic Public Participation

Society has organized the decision-making process in a centralized manner mostly to obtain political and economic efficiency. This has been done essentially using an approach based on technical rationality to justify and implement decisions, creating as a result, a competitive and highly conflictive decision-making environment in which public involvement has had an extremely limited role (Kuhn and Ballard, 1998).

Public participation involves more than simply finding the right tools and techniques for increasing public involvement in public decisions, it requires a new approach in which the input ideas and concerns of citizens have the potential to have an impact in the decision making process.

The actual framework of public participation, as described by King, Felty and Susel (1998), consists of four major components: (1) the issue or situation, (2) the administrative structures (systems and processes in which participation takes place), (3) the administrators, and (4) the citizens. Under this conception, the components of actual public participation are grouped around the issue, being surrounded first by administrative systems and processes, then by the administrators, and finally by citizens, who are placed at the greatest distance from the issue.

The authors also explain that current public participation within this context is ineffective and creates conflict; and that public involvement happens to late in the process wherein all the issues have been framed and most of the decisions have been made. Therefore, rather than being cooperative and supportive, which is the best way to address the issues; citizens are reactive and critical of the entire siting process.

Authentic public participation can be defined as deep and continuous involvement in the administrative processes with the potential for all the participants involved to have an effect on the situation, and in the position in which all parties are comfortable with the decision made. Authentic participation places the citizen next to the issue, situating administrative systems and processes at the end, and the administrators operate as the bridge or connection between the two.

2.7.4 Open and Closed Approaches

Kuhn and Ballard (1998) state that there are two basic approaches to facility siting, the open and closed approaches. The main difference between these approaches consists in the commitment to public participation and the distribution of decision-making power among community residents, proponents, and local governments. Therefore, communities that are open to create their own decisions make the siting a voluntary and cooperative process. Administrators and proponents that impose a siting decision over a community make of siting a conflictive and contradictory process. Both approaches are extremes in a scale of decision making, however, this scale implies that siting techniques can show characteristics of both open and closed approaches.

The closed approach, or also called DAD (decide-announce-defend) approach, generally has seven sequential phases: (1) goal identification, (2) project characterization, (3) selection of site specific evaluation criteria, (4) area and site screening, (5) site assessment and selection, (6) final detailing design, and (7) site decision. When the facility design has been completed, a site is announced to the prospective host community, then, a justification and education process is carried out to demonstrate the environmental and technical integrity of the project.

Closed siting approaches are frequently unsuccessful because they do not give enough importance to social and political considerations. Alternatively, the open siting approach exists to address public distrust, supports more effective public involvement and shares decision-making power.

The open or ECFD (establish criteria-consult-filter-decide) approach has become the evolving siting process. The application of the open approach tries to overcome the social and political factors that lead to conflictive siting problems. Consequently, a fundamental principle is applied in this approach, that only those communities that volunteer to study siting a facility are considered as potential hosts.

The open approach regularly has seven sequential stages: (1) establish general environmental criteria, (2) broad public consultation, (3) invitation to participate, (4) consultation with interested communities, (5) site investigations, (6) community referendum, (7) and site decision. Potential host communities have the right to withdraw from the siting process at any time that they deem convenient.

In the open approach scenario willing communities must confirm that they have potential sites that meet the required environmental criteria, and that the majority of residents must support the project, therefore ensuring that local residents effectively hold the balance of decision-making power.

2.7.5 Risk Substitution Methodologies

The approach of offering risk-reducing actions (i.e., citizen inspection of the facility operations) to a community or group of communities in order to accept a facility induces a small number of individuals to accept the facility. The principle that potential economic benefits can be reached with the facility tends to be even less effective. Because public opposition towards facility siting has been increasing in the last few years, Brown (1997) suggests that "risk substitution" could be a major approach for facility siting. Under this scheme, parties involved in siting a certain facility, offer to eliminate an existing risk in change for a new one. But the author prudently explains that while this methodology does not modify value structures or political processes; it fails to address the basic principles that are required to overcome widespread public distrust. Therefore, this method can only be a short-term solution and will not diminish public indignation.

Kleindorfer (1986) considers a five-staged approach for siting hazardous waste facilities and it can be illustrated as follows: Stage 1 takes place when a request for proposal (RFP) is announced by the regional siting authority. This request gives a brief description of the process to be followed in the subsequent stages. Communities are informed that technical support through assistance funding will be provided in the case that they are selected in the screening process. These funds will allow exploring the viability and necessary conditions for locating a hazardous facility within the boundaries of the selected communities. Communities' committees are also informed that they can abandon the siting process at any time. A description of the potential risks is generated jointly with a projection of tax and employment benefits. In stage 2 the screening process to find suitable communities occur and technical assistance grants for risk and value assessment and community intervention are conferred to those communities considered feasible candidates. Stage 3 consists of local negotiations between developers and the communities that remain after carrying out the technical and community feasibility studies, in this phase, each proposal struggle to arrive to a preliminary agreement on the terms of insurance, liability, organization, operation, technologies to be employed and forms of compensation. In Stage 4 a collective decision is made among the community-developer pairs who have reached an agreement in the previous phase. Stage 5 is also called the implementation and control phase because provincial and local monitoring operations are put into practice in order to achieve the agreements arranged between community and developers. An additional stage may be necessary to ensure an economic efficient outcome by the use of the appropriate final community selection method (i.e. auction).

Zeiss (1994) considers that quantitative risk analysis, risk perception psychometrics, cultural theory of risks, voluntary auctions, and prospect theory are among the most important methods used to negotiate during a facility siting process.

2.7.6 Quantitative Risk Analysis

Quantitative risk analysis, which is a component of risk assessment, uses scientific knowledge of physical cause-effect interactions to predict not only human health risks but also ecological risks. Quantitative risk analysis is useful for determining physical risks and impacts, and their spatial distribution, but it does not help to predict adequately community reactions.

The specific factors evaluated in risk analysis are: probability, quantity or severity, intensity reduction through spreading, population exposed in numbers by sensitivity and duration, and dose response (which is the correlation between the hazard amount received and the resulting change to receptor health or well-being). (Zeiss, 1994).

Quantitative risk analysis focuses on reducing uncertainty and improving accuracy of the estimates. The risk estimates can be weighted against common metric limits, with risk or impact mitigation and control costs, or with social benefits and costs. Substitutions among risk estimates can be determined and used to optimize more effective engineering design and impact control.

2.7.7 Voluntary Auctions

Voluntary auctions are based on gaming theory and management science of competitive biding; they consist of a voluntary decision made by a community willing to participate and that can define the minimum acceptable level of compensation to host the waste facility.

Public auctions are one of the approaches that can use financial incentives for facility siting. The reverse Dutch auction is one of the most suitable methodologies to site LULUs. Within this approach a community bids to be paid for hosting a facility and the price level is set by the auctioneer not the participants; hence, in a reverse Dutch auction, the price would be risen until a community with an environmentally acceptable location decides to take the offer, ending with this the whole procedure (Inhaber, 1992).

Auctions enhance community control via voluntary participation and choice, improves efficiency and focus on relevant impacts and values.

2.7.8 Prospect Theory

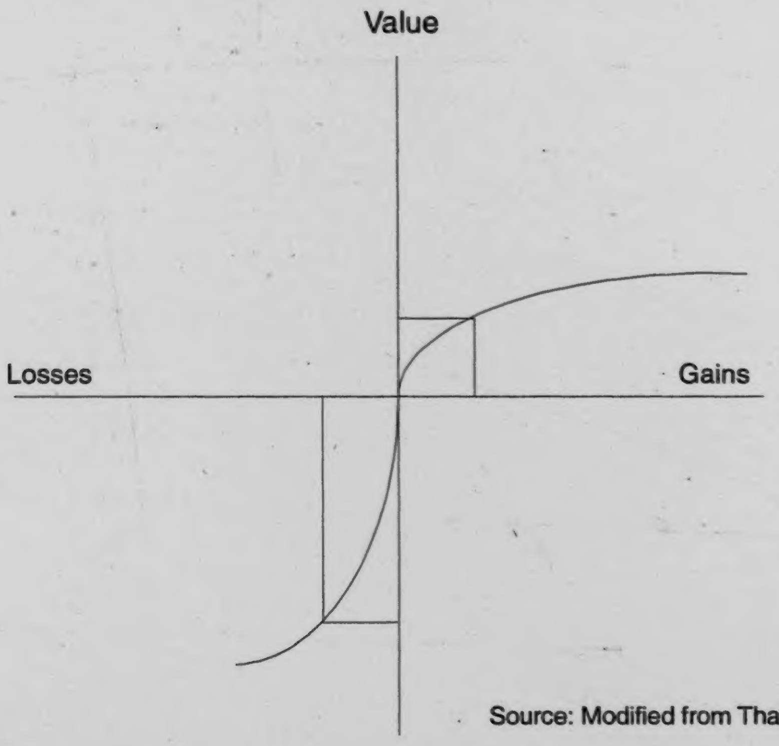
Thaler (1985), explains that public mental accounting systems often influence behavioral and attitudinal decisions in unanticipated ways. Therefore, prospect theory, which is a hybrid method of economics and psychology, assists in describing individual choice under uncertainty in a way capable of capturing simple framing effects and other abnormalities.

In prospect theory, gains and losses are relatively correlated to some natural reference point. This characteristic reflects the fact that people appear to respond more to perceived changes than to absolute levels. Additionally, under this conceptualization, where losses have a value function that is convex and gains have one that is concave, the loss function is steeper than the gain function (Thaler, 1985).

When trying to code gains and losses altogether, they can only be valued jointly (integrated), or separately (segregated). Consequently, when using prospect theory for classifying gains and losses the following situations can be present: (1) an increase in a gain should be segregated, (2) an increase in (the absolute value of) a loss should be integrated, (3) A decrease in a gain should be integrated (cancellation) and, (4) a small reduction in the absolute value of a loss should be segregated. This small reduction in the absolute value of a loss is also called silver lining (Thaler, 1985; Zeiss, 1994).

Prospect theory states that losses prevail over gains in community value judgments, therefore, when applied to the field of environmental management, impact and risk control or reduction measures seem to be more effective than providing compensatory measures and other benefits to the potential host communities. In addition, prevention and mitigation measures are preferred over monetary compensation or replacement of affected goods.

From the reference point, the absolute value of losses is reflected in the steeper slope of the loss curve of prospect theory, consequently, it is more probable that residents respond more sensitively to impact losses from waste facilities than they are attracted by the potential benefits, as a result changes are not considered more desirable than the status quo. Figure 2.1 illustrates the slopes for gains and losses from the prospect theory perspective. It can be observed that the public perceives a greater diminishing value when it is a loss than for the same amount of a gain.



Source: Modified from Thaler, 1985

Figure 2.1 Prospect Theory

2.7.9 Risk Perception

Public beliefs and the resulting attitudes towards the facility greatly influence their behavior over a proposed facility. In other words, the cause-effect association in risk perception is based on the belief-attitude-behavior relationship. A group of personal beliefs creates the informational basis for attitude, intention and behavior (Zeiss, 1994).

Dread characteristics of the technology, lack of understanding, catastrophic potential and perceived benefits, are some of the non-technical risk factors identified by risk perception psychometrics.

People use several general inferential rules to evaluate risks based on what they remember hearing or observing about the risk in particular. These assessment rules are known as heuristics, and they are used to reduce difficult mental tasks to simpler ones. Even though, heuristic judgment is appropriate for some circumstances, it can create constant bias for other situations of decision-making in different study fields (i.e., financial analysis).

Among the diverse number of heuristics already identified, availability is of particular importance for the area of risk perception. People that make use of this heuristic tend to associate the recurrence or likelihood of an event happening with the ability of that event to be imagined or recalled. Frequently occurring events are usually easier to imagine and recall than are unusual events, under this judgmental conception, availability is an appropriate indicator. However, other factors unrelated to frequency or occurrence can affect availability, thus people's misconceptions and incorrect decision-making can be possibly explained by availability bias (Slovic, 1980).

Availability bias can be present in several forms. Judge frequency of lethal events, biased newspapers and biased judgments, the “it won't happen to me” factor, and the “out of sight out of mind” situation can trigger public misperceptions.

Slovic (1980) infers that overconfidence is also an insidious manifestation of heuristics. This aspect takes place when people typically have large confidence in judgments based on personal opinion. Overconfidence can be present in other ways as well, for example in a hyperprecision manner that depends on anchoring and adjustment heuristic. Conversely, experts may have a tendency to overconfidence as common people. Some of the common situations in which experts may fail to notice or miscalculate approaches to unsafe conditions can be describe as follows: (1) failure to consider the ways in which human mistakes can affect technological systems, (2) overconfidence in current scientific knowledge, (3) failure to appreciate how technological systems function as a whole, (4) slowness in detecting chronic and cumulative effects, (5) failure to anticipate human response to safety measures, and (6) failure to anticipate common-mode failures which simultaneously afflict systems that are designed to be independent.

Previous research (Slovic et al. 1985) in the field of risk perception, expresses that judgment of non-experts is systematically different from experts' judgments. Experts' risk perception is strongly interrelated with scientific estimates of annual number of fatalities and with a large range for determining the level of risk. Laypeople, on the other hand, are considered to perceive those risks from most hazardous activities to be increasing, not easily reduced, and better known to science than to people exposed to the risks.

In the specific case of nuclear power (which is perceived remarkably dreaded and unknown), people's fears and political opposition are not absurd ideas; on the contrary, they can be recognized as a logical consequence of their concerns about issues related to equity, fairness, catastrophic potential, probable intergenerational impacts, etc.

Other studies (Reams and Templet, 1995) have also revealed that individuals tend to accept environmental risks if the exposure is voluntary, the risks are similar or associated to other more common risks, and if individuals receive compensation for being exposed. Certain amount of tolerance is also developed in individuals when they become more accustomed or familiar with a specific activity or facility.

2.7.10 Cultural Theory of Risk

The cultural theory of risk tries to clarify that the differences in risk perception and their responses are attributable to five culturally different worldviews: (1) Individualist (entrepreneurs), (2) hierarchists (bureaucrats), (3) egalitarians (sectarian interest groups), (4) disenfranchised fatalist (victims), and (5) hermits (detached) (Zeiss, 1994).

The cultural theory of risk (CTR), as described by Zeiss (1994), affirms that an individual's adherence to a specific pattern of social relationships produces a distinctive way of looking at the world; and therefore, adherence to a certain worldview has a correspondent form of social relation. Cultural bias and social relations interrelate to generate patterns of interpersonal relations, beliefs and values that are consistent with each other.

The five different types of cultural bias and social patterns depend on myths concerning nature. These myths are systems of beliefs that are created from unquestioned assumptions and they confirm some part of the individual's experience. Table 2.1 summarizes both social patterns and myths about nature.

The five cultural bias approaches define technological risks by the risks to their worldview and to their groups' social boundaries and patterns of interaction, for example egalitarians perceive harmful those facilities which are centrally controlled and where there is no explicit consent from all affected parties (Zeiss, 1994).

Table 2.1 Association of myths about nature with social patterns.

MYTHS ABOUT NATURE	SOCIAL PATTERN
1. Nature benign	Individualist (Entrepreneur)
2. Nature Ephemeral	Egalitarian (Sectist)
3. Nature Perverse/Tolerant	Hierarchical (Casteist)
4. Nature Capricious	Fatalist (Victim)
5. Nature Resilient	Autonomous (Hermit)

Source: Modified from Zeiss, 1994

2.8.0 Geographical Information Systems (GIS)

2.8.1 Introduction

Some authors (Haklay, et al., 1998; Lovett, et al., 1997; Siddiqui et al., 1996) define geographical information systems (GIS) as computer systems that are used to store, integrate, analyze, and display spatial data, whereas Domínguez (1997) explains that GIS is a computerized system that integrates digital maps with a variety of databases for analysis.

A complete GIS hardware and software system, is the one that allows users to view, update, query, analyze, combine, and manipulate data from a wide variety of sources to create new maps and tables. Any work that contains a spatial component is likely to benefit from the use of GIS. It is extremely useful in the displaying of findings of the matter under study and examining correlations among layers of data.

GIS simply means gathering information associated with physical or geographical space, converting it into a form that a computer can recognize, and then manipulating the information to design work processes, generate evaluations for decision making, and/or create more cost effective service-provision (Rabago and Spiers, 1993). It should be possible for the system to deal with data from many sources and in many formats so that they can be used in decision support tasks.

It should be stressed that GIS can contribute not only to suitability analysis; it can also be valuable for risk assessment, risk communication, to address equity concerns, and for assessment of management policies. GIS is a valuable tool, which can help to represent graphically any land related information (Wilson, 1997).

Raster and vector are the two categories in which GIS data can be classified. Raster-based data divides the spatial area into grids of the same size. To each grid a different category value is given, representing different geo-referenced attributes. Vector-based data utilizes lines, polygons and points, providing to each and every one of them a different category value, to represent different spatial attributes in the existing world.

GIS have three fundamental capabilities; the first one is maintenance of data, the second is manipulation of databases to extract necessary information, and the last capability is the employment of gathered information in the decision making process (Baban and Flannagan, 1998).

The uses of GIS can be classified into the following areas: (1) inventory, which is the collection of the primary databases and their subsequent storage in a GIS, for monitoring and administration purposes, (2) modeling, is the GIS capability that can be utilized to simulate environmental processes and to predict the outcome of development actions, natural hazards or environmental change, and (3) land suitability mapping, which is a technique that can be used to determine the most favorable location for any development event given an array of objectives and other criteria required (Baban and Flannagan, 1998). Several methodologies make use of computerized land suitability mapping conditions, wherein, a series of maps containing environmental social and economic information are weighted, using Boolean logic functions, and then overlaid to obtain the most and least suitable locations to site any type of facility.

GIS systems can be employed throughout the early phase of an Environmental Impact Assessment (EIA). The initial stages of an EIA consist of the screening and scoping processes. The screening process, fundamentally, addresses whether or not an entire EIA should be conducted, whereas the scoping process focuses mainly in establishing the particular concerns and impacts which have to be addressed in a comprehensive environmental study (Canter, 1996).

Haklay et al., (1998) claim that even though the great potential of GIS for EIA analyses is well known, and GIS has been used for EIA, the present applications of GIS have not made complete use of its analytical capabilities. At the present time the usage of GIS does not reach its greatest potential due to the lack of awareness by many practitioners on the one hand, and on the other by the deficiency of data accuracy, the high fixed cost of databases acquisition and maintenance, and possible reliability problems of GIS.

Conversely, a GIS-based analysis can improve the quality of the EIA study. Using GIS during the scoping and screening processes may assist in reducing the probability of ignoring or overseeing an essential environmental issue or failing to notice potential impacts that could be present on a specific site. GIS has the additional benefits of accumulating the data in a single storage location and improving the perspective of the decision maker in the scoping phase.

2.8.2 GIS and Facility Siting

Geographical information systems (GIS) have the capability to handle and simulate the necessary economic, social, health, environmental and political constraints and factors, to provide the most favorable waste disposal locations; as well as several additional applications in some other fields, for example, resource management, land use management, transportation planning etc. (Baban and Flannagan, 1998; Lin and Kao, 1998; Charnpratheep et al., 1997; Lovett et al. 1997).

As a result, with the help of GIS methodologies, decision makers are able to formulate decisions that are environmentally safe, economically realistic and acceptable to the public.

With the advent of GIS, the landfill siting process has become progressively more and more dependant on sophisticated spatial analysis and modeling. In a preliminary screening process, the employment of GIS is usually carried out by categorizing a specific map with chosen criteria, into precisely clear classes, or by producing buffer zones around restricted geographic elements. Hereafter, all map layers are then intersected giving as a result a composite map containing two distinct zones, suitable and unsuitable sites. These two different classes separated by a sharp boundary represent geo-referenced data based on a binary true or false Boolean logic and they are generated through GIS.

Researchers (Charpratheep, et al., 1997) express that in general, landfill site selection is divided into two main phases: the identification of potential suitable sites through preliminary screening, and the evaluation of their suitability based on EIA engineering design and cost comparison. The main purpose of preliminary screening is to remove unsuitable areas from further consideration and to maintain those zones that can be appropriate for siting a facility for additional study. Realistic criteria and methodologies should be used to remove areas of social and environmental importance during the screening process, but without removing large numbers of technically advantageous sites from consideration.

Some other refined approaches, called Fuzzy models, create suitability classes around geographical features; these classes describe the degree to which will be appropriate siting a facility within certain distance from any protected geographic component. Fuzzy models can be used to provide suitability contours while dealing with natural phenomena that is not characterized by sharply defined boundaries (i.e., change in slope), or when there are other spatial imprecision, for example, when it is not well defined or unknown the exact position or exact extent of an object in space. These fuzzy methodologies can also provide high-quality output while in a decision making process the human evaluation scheme is, to a certain extent, inexact (i.e., when trying to define how far is far enough from a given constrained geographical feature) (Charpratheep, et al., 1997).

2.9.0 Site Selection Criteria

2.9.1 Landfill Siting Criteria

Site selection criteria for LULUs are essentially mirror representations of impact mitigation measures and they must be selected to reduce or eliminate the negative impacts associated with such land uses (Noble, 1992).

Research on facility siting (Baban and Flannagan 1998) indicates that all site selection processes must be based on physical, safety, environmental, political, and technical constraints and factors. Some current methods use a set of physical exclusionary criteria based on the location of sensitive areas, and geological and hydrological information. These approaches can effectively generate the physical requirements when selecting a site, but regrettably, it does not provide any of the preferred conditions, for example satisfactory atmospheric conditions of the site. Some other selection processes, already include suitability as well as exclusionary criteria based on surface soils, topography, hydrographical, atmospheric conditions, recreational value, human environment, etc. Some additional landfill siting criteria employed (Lin and Kao, 1998) include: land slope, which helps to evaluate construction, operation and maintenance difficulties, population density, assists to reduce the possible health hazardous risk to the population and land ownership, and to evaluate the difficulty for obtaining the land.

Noble (1992), explains a criteria selection system called DRASTIC that is used for evaluating the potential for groundwater contamination using hydrological attributes. This system compares areas by assigning weights and ratings to seven factors that affect groundwater pollution, and that can be enumerated as follow: (1) Depth to water table, (2) Recharge (net infiltration), (3) Aquifer media, (4) Soil media (surface soils), (5) Topography (slope), (6) Impact of the unsaturated zone media, and (7) Conductivity (hydraulic) of the aquifer. Each DRASTIC component has been assigned a weight based on their relative importance, varying from 1 to 5, being 5 the most significant and 1 the less significant. Hereafter, each DRASTIC factor is divided into ranges or significant media types that have an impact on pollution potential; assigning ratings that vary between 1 to 10. As a result, a high rating denotes a high potential for pollution.

Another methodology employed for landfill siting is the "Intrinsic Suitability approach" (Noble, 1992), which can be used to solve the problem of exclusionary and non-exclusionary components. The criteria used were classified into two different categories; the first group consists of six exclusionary criteria and failure to meet any one of them result in elimination from further consideration. The next group of seven criteria could be overcome by technological advancements. The first six criteria are: (1) 305 m from the normal high water mark of a lake, pound or flowage, (2) 100 m from any stream, (3) a minimum regional (100 year) floodplain, (4) outside of a wetland, (5) it would not present a bird hazard to any airport, and (6) outside of a karst development on the site. And the second group consists of: (1) proposed fill and trench areas within 305 m of the nearest edge of the right of way of any state, federal, or interstate highway, any occupied residence or any public park, (2) any wetlands or public waters would not be impacted during development of the site, (3) there are erosion, drainage or other natural processes occurring in the area which could lead to problems at the site or site failure, (4) a drinking water supply reservoir would be impacted by the site, (5) any ground water which is present is a water supply, is capable of being withdrawn at a sustained yield of four litres per minute or recharging to another aquifer, (6) ground water is not protected by an aquiclude, and (7) ground water cannot be monitored by routine methods (Noble, 1992).

Noble (1992) also describes how the criteria for landfill siting can be divided into two phases; the regional and the local criteria for landfill siting. Table 2.2 and Table 2.3 depict both stages.

Table 2.2 Description of Regional Criteria for Landfill Siting

PHASE	SUBDIVISIONS	CRITERIA
PHASE 1. Regional Criteria for Landfill Siting	Natural Features	• Wetlands • Flood Plains • Surface Waters • Groundwater • Suitable Soils for Ground Water Protection • Fault Zones • Seismic Impact Zones • Unstable Areas • Expansive Soils • Subsidence Soils
	Land Use	• Development (Existing and Committed) • Airports • Municipal Wells • Prime Farmland
	Economic Factors	• Proximity to Major Highways

Source: Modified from Noble, 1992

Baban and Flannagan (1998) also indicate some of the criteria to be considered for a landfill siting process, and can be described as follows: the location of the landfill must be situated outside of urban areas because the size of the parcel of land required for a landfill would be costly and unattainable, however, it might be located as close as possible to the waste source. The landfill should also be located as near as possible to a main road due to accessibility and cost reduction benefits, but at the same time, it must be located at a certain distance from the road to minimize visual impacts and prevent material from being blown onto the road. Another important criterion is that the landfill has to be located beyond 500 m from a railroad to avoid any possible problem with its stability and to prevent visual impacts. Land with agricultural, historical, scientific, or natural importance should be protected, and to minimize pollution to surface water and groundwater, those sites that could be vulnerable for both constraints must be excluded.

Table 2.3 Description of Local Criteria for Landfill Siting

PHASE	SUBDIVISIONS	CRITERIA
PHASE 2. Local Criteria for Landfill Siting	Natural Features	• Depth of Suitable Soils for Cover • Existing Depressions • Natural Screening • Run-on Potential • Residential Well Density • Ease of monitoring Groundwater • Slope • Threatened and Endangered Species • Scenic Areas • Significant Depth to Groundwater Resources
	Land Use	• Buffer Zone • Final Use Compatibility • Municipal Boundaries • Area of Historic importance • Areas of Architectural Importance • Areas of Paleontological Importance • Areas of Archaeological Importance • Highway Restrictions • Traffic Impact • Distance from Centroid of Waste Generation or Transfer • Availability • Land Holding in Large Parcels

Source: Modified from Noble, 1992

Even though most criteria concern environmental aspects, financial and administrative characteristics can also be considered. Some criteria for landfill siting (refer to table 2.4) are provided by Willekens et al. (1993). The authors also present a methodology applied to landfill siting in an EIA; the three steps used consist of: (1) exclusion of site, (2) limitation of the number of non-excluded sites, and (3) arrangement of the remaining sites. In the first phase (exclusion of sites) the areas where the landfill is not required are localized. The second step narrows the possible large number of potential suitable sites into few ones. Finally, during the last step the most suitable site is chosen.

Odor, noise, and visual impacts should be considered as fundamental criteria for landfill site selection because they can propitiate a strengthening of public opposition towards the facility. As explained by Zeiss and Atwater (1993), nuisance impacts are those impacts that alter the serenity in the vicinity of residential zones or the environment, but without jeopardizing human health. Residents of the host community frequently associate nuisance impacts with health effects, thus, the difference between both conditions is not always defined.

A more thorough and descriptive collection of landfill siting environmental and community criteria has been assembled on Appendix A Table A-1. This collection of criteria contains also probable impacts, and in addition, some of the criteria listed can be employed for siting other LULUs besides landfills (i.e. incinerators, transfer stations, composting facilities, recycling centers).

2.9.2 Airport Siting Criteria

Most of the criteria required for airport siting are difficult to attaint due to the lack of information related with the topic, and because most parts of the impacts associated with airports' operations are prevented, controlled or mitigated with best management practices. In spite of these difficulties, several criteria necessary for finding the most suitable location for an airport can be determined from the few publications and information material acquired.

Thomas (1996) indicates that the annoyance produced by aircraft noise is the single most important environmental impact that local residents wish to be controlled. Since noise is a nuisance impact (also refer to Zeiss and Atwater, 1993), and there is a social problem associated with the notion of quality of life, therefore, it is essential to locate the airport sufficiently far from major urban areas and that neighboring individuals contribute in the planning of the noise abatement program (Thomas, 1996; Meyer, 1996).

Table 2.4 Siting Criteria Groups Used for Facility Siting

GROUP	CRITERIA
1. Soil and Groundwater Protection	• Geo-hydrological situation, risk of contamination spreading via soil or groundwater • Vulnerability of soil, groundwater and surface water
2. Landscape	• Archeological and historical patterns and objects • Visual structures
3. Ecological Values	• Floristic and faunistic values • Ecological structure
4. Nuisance, Noise, Quality of Living	• Number of people who will experience nuisance (i.e., noise or stench) • Safety aspects (main electricity and gas connections)
5. Transport	• Transport routes through populated zones • Possibility of transport by road, rail, or water
6. Cost/Expenses	• Loss of current economic values • Attainment, exploitation and maintaining a landfill
7. Administrative Implications	-

Source: Modified from Willekens et al. 1993

Odorous compounds and other pollutant species might have strong effects in the air quality at airports and their vicinity. Ethylene, formaldehyde, methane, propylene, and acetylene are among the dominant hydrocarbons that can be generated by aircraft engines and produce odor impacts. Meanwhile carbon monoxide

(CO), nitric oxide (NO), nitrogen dioxide (NO_2), ozone (O_3), sulphur dioxide (SO_2) and volatile organic compounds (VOC) are among the substances that largely contribute to deteriorate air quality in the surrounding environment (Wayson, 1996; Taylord, 1996).

Surface water and groundwater can also be affected negatively by airport operations and off-site activities. Some of these actions are: (1) vehicle and aircraft washing, (2) vehicle maintenance, (3) agricultural and horticultural activities, (4) fuel and chemical spillage, emergency services, and (5) cold weather operations (Grantham, 1996; Johnson and Pedoe, 1996; Hofstetter, 1996; Edmonton Airports, 1998). Table A-2 in Appendix A describes a more complete and comprehensive set of environmental and community criteria that can be used for airport siting processes.

3.0.0 Research Methodology

The present research offers a better insight in the field of facility siting with the application of GIS, even though, the whole process could seem to be of some complexity it can provide more reliable results to be used during the planning and decision making processes. The highlights of this study consist in the pioneering approach and the innovations that are taken to obtain conclusions. These innovations will be discussed later in the chapter as each step taken will be explained in full detail.

The main stages of the investigation consist of the following: (1) selection of type of facilities, (2) selection of the area under study, (3) selection of significant criteria and attainment of spatial databases, (4) survey and newspapers investigation, (5) GIS application and analysis, (6) attainment of results (scenarios), (7) recommendations. Figure 3.1 can give a better outlook that corresponds to the flow diagram of the different activities or steps taken in the research.

3.1.0 Type of Facilities Selected

The research completed by Slovic et al. (1985) was of fundamental importance in selecting the two types of facilities required for the present investigation. In their study, Slovic et al. tried to address perceived risks, by asking people to characterize and evaluate several hazardous activities and technologies in a diversity of ways. They also tried to create a psychological classification of risk to understand the public's perception of a given risk, predict societal response, and create methodologies to evaluate public opinion about a risk in a way that is valuable for decision making. As a result of this study, the positions of the hazardous activities or technologies used in the analysis were found in a two dimensional coordinate system. The x-axis corresponds to the Dread of The Risk (Factor 1), which can be represented by lack of control, lethality, high catastrophic potential, reactions of dread, inequitable distributions of risks and benefits, and the belief that risks are increasing and not easily controlled. The y-axis corresponds to the factor Unknown Risk (Factor 2), which denotes a risk unknown, unobservable, new and delayed in their manifestation.

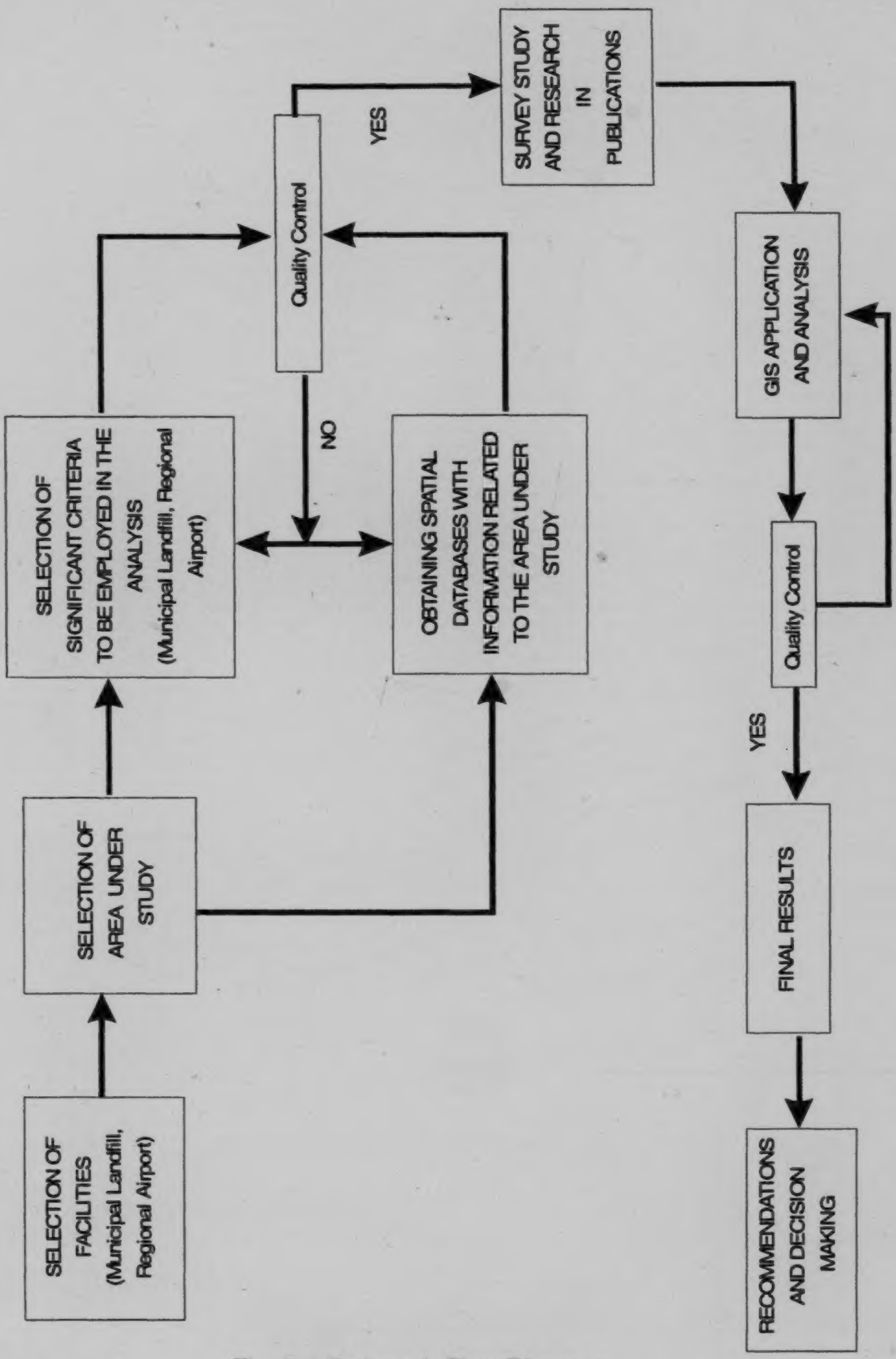
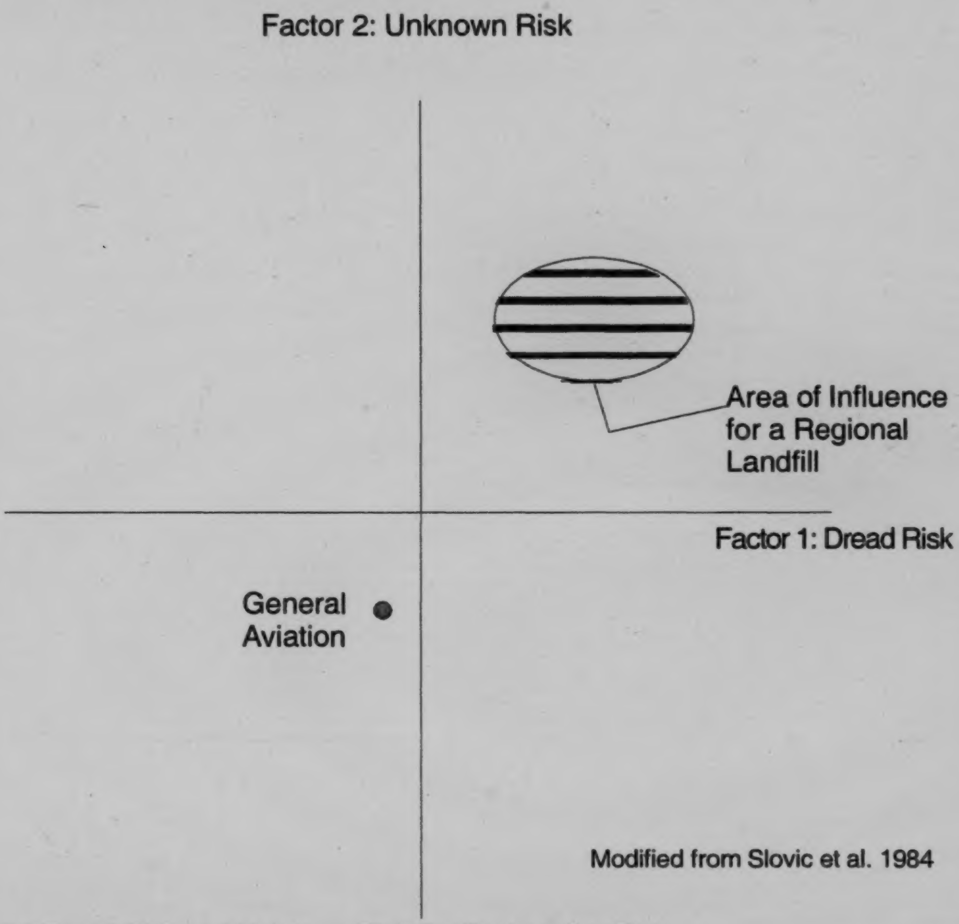

SELECTION OF FACILITIES (Municipal Landfill, Regional Airport)
SELECTION OF AREA UNDER STUDY
SELECTION OF SIGNIFICANT CRITERIA TO BE EMPLOYED IN THE ANALYSIS (Municipal Landfill, Regional Airport)
OBTAINING SPATIAL DATABASES WITH INFORMATION RELATED TO THE AREA UNDER STUDY
Quality Control
NO
YES
SURVEY STUDY AND RESEARCH IN PUBLICATIONS
GIS APPLICATION AND ANALYSIS
Quality Control
NO
YES
FINAL RESULTS
RECOMMENDATIONS AND DECISION MAKING

Fig. 3.1 Research Flow Diagram

It is interesting to select, for the purposes of the present research, a facility or activity that is associated with a high degree of unknown risk, and that is also perceived as to be highly dreaded. Consequently a facility on the other side of the spectrum would be also important to study in order to determine any possible discrepancies or similarities between the siting characteristics of the two facilities. A regional landfill was selected as the facility or activity to be perceived as highly dreaded and highly unknown, and a regional airport was chosen as the activity that is fairly familiar and not highly dreaded. From the Environmental Engineering perspective, both facilities are of special interest to be considered in a location allocation analysis because they are regarded as being unwanted land uses with a large array of negative impacts. Figure 3.2 provides a better understanding of the location of the two facilities in the Dread Risk and Unknown Risk graph.



Modified from Slovic et al. 1984

Figure 3.2 Dread Risk and Unknown Risk Facility Location Plot

3.2.0 Selection of the Area Under Study

In order to determine a suitable geographic area to carry out the current investigation, three municipalities in the province of Alberta were pre-selected based on the notion of the existence of previous landfill siting attempts. The pre-selected regions were the County of Lethbridge, The County of Taber, and The County of Mountain view. A simple pair wise comparison was utilized to choose the final area to be employed in the study. A pair wise comparison consists of measuring the relative importance of a criterion against another criterion in a group of criteria, giving it the value of 0 if it is not as important as the other criterion or the value of 1 if it is more important. When finishing comparing each criterion with all the remaining criteria, all the individual comparison values were added for each one of the criteria. Then every criterion final value was normalized by dividing it by the addition of all the final values of the factors utilized. The criteria used for choosing the definitive region in the pair wise comparison were (1) population of the municipality, (2) population which the facility will serve, (3) the area of the municipality, (4) area to which the facility will serve, (5) availability and quality of the existing information available, (6) history of social opposition to the facility within the municipalities, and (7) variation of demographic characteristics.

After performing the pair wise comparison exercise, the County of Lethbridge was selected as the area under study with a comparison value of 0.357. The County of Taber and the County of Mountain view both obtained a comparison value of 0.321. From the point of view of the criteria employed in the pair wise comparison procedure, the County of Lethbridge was selected because it has a larger population, the facility would serve a higher number of people, there is extensive information about past siting efforts, there is history of social opposition towards siting a new landfill, and there are a more educated number of people and with a higher average income. It is important to mention that the City of Lethbridge was also considered in the exercise as being part of the County of Lethbridge, and for that reason the residents of the city were added to those of the County.

In the case of a regional airport, there have not been any siting attempts in the province of Alberta since the late 1970's or early 1980's, therefore previous siting efforts related to this type of facility were not considered in the pair wise comparison exercise.

3.3.0 Selection Process of the Siting Criteria for the Analysis

From the literature review carried out for the study a very detailed inventory of the criteria, impacts, or issues related with siting a municipal landfill and an airport was created. The complete tables with all the criteria can be found in Appendix A.

The selection of the significant criteria required for the analysis (selected from Tables A-1 and A-2 in Appendix A) was accomplished by taking into consideration three different notions: (1) availability of computer based information describing the different criteria to be used, (2) importance of each one of the criteria to be considered in the investigation, and (3) easiness of the criteria to be used in the GIS analysis. As the research progressed the attainment of computer databases containing information related to physical and community criteria, of the area under study, became more and more difficult, therefore, availability of the spatial information turned into the most important factor in choosing the criteria for the analysis. The main source of spatial information was the administrative office from the County of Lethbridge, they provided most of the information related to physical characteristics from the county and some of the information to be used for the analysis of the social or community criteria.

Some other organizations that made available spatial information were Environment Canada, Alberta Energy and Utility Board, and Alberta Development.

Two other techniques utilized to find the significant siting criteria required for the analysis were a systematic random sampling survey, and a research for significant articles in three publications of the area under study; both procedures will be subsequently explained.

3.3.1 Sampling Survey

A systematic random sampling[1] survey was conducted in three communities of the County of Lethbridge in order to select some of the significant social criteria to be used in the siting analysis, and to establish the possible attitudes or behaviors that the residents could adopt towards hosting a regional landfill or a regional airport nearby.

The survey was conceived to extract the actual environmental, economic, political, social, demographic, and public services conditions that prevail in the communities chosen. It also tries to determine personal perceptions of people towards hosting a LULU nearby, in particular a regional landfill and a regional airport. The survey consisted of 42 closed questions and 11 open questions. Appendix B, Section B-1 provides a layout of the survey employed in the study.

For the purposes of the investigation, the systematic random sampling conducted was generated with the use of the telephone number directory for the region under study. The methodology consisted in choosing a random starting point on the white pages, and then on every ten pages, the fifth person found to reside in one of the three communities selected was chosen. The second step was to contact by telephone the people selected through the telephone directory and explain to them the reason for the call, and ask them if they were willing to participate in the survey. After obtaining a positive respond from the people to participate in the exercise, the surveys were delivered to the respondents' addresses and then recollected in the next two days. In case that any of the respondents was not able to provide back the survey within the recollection period, an envelope was given to the remaining subjects so that they could submit the survey through the mail.

The three communities randomly selected to carry out the research survey were the Village of Barons, the Village of Nobleford, and the Town of Picture Butte. In each one of the communities the determined sample size was 25 surveys, one per household, and totaling 75 surveys for the complete study.

For the communities were the survey was conducted the percentage of response is as follows: Barons 52 %, Nobleford 56%, and Picture Butte 64%. The overall survey response percentage was 57.3 %. The direct results of the survey statistical analysis are provided in Appendix B, Sections B-2, B-3, and B-4.

3.3.2 Survey Statistical Analysis

In order to extract significant information from the survey conducted in the communities chosen, three different steps were followed. The first phase consisted in identifying the frequencies and averages of the responses to the questions contained in the survey. The second step tries to find the correlations or possible relationships between some of the variables enquired in the survey (age, family with children, gender, rift in the community, etc.), and the respondents' opposition to host the LULUs under scrutiny at several different distances (1.6 km, 8 km, 25 km, and 32 km). The final step consisted in determining if the constraints and factors selected as significant from the previous phase can have a collective influence towards facility opposition, this was accomplished by using ordinal regression models. The complete statistical analysis was generated by means of the statistics computer program SPSS version 10.0 for windows.

Step number one, as previously mentioned, considers the valid and the missing answers for frequencies and percentages obtained for the 42 close questions from the survey. The results from the first step of the statistical analysis are depicted in Section B-2, Appendix B.

As the results of the survey consist only of nonparametric data, at the nominal and ordinal level, the statistical tests chosen to complete the second step in the initial statistical analysis are Goodman and Kruskal's Tau[2], lambda x[3], and Somers´ d[4].

From factors measured in the survey, 20 different independent variables were selected to carry out the crosstabulation analysis employing the tests already mentioned. These variables are portrayed for both facilities in Tables B-3.1.1, B-3.1.2, B-3.2.1, B-3.2.2, B-3.3.1, B-3.3.2, B-3.4.1, and B-3.4.2 in Section B.3, Appendix B.

In previous studies (Lober and Green, 1992), as it can also be observed from the frequency results of the survey, oppositional attitudes towards some LULUs vary inversely with distance. It has been also determined that people start to be more acceptable of hosting the facility at a distance of 8 km from the community. Therefore the degree of opposition measured in the survey at a distance of 8 km was chosen as the dependent variable in the analysis.

Goodman and Kruskal's tau, Somers' d, and Lambda x tests were performed on the survey results obtained from the Village of Barons, the Village of Nobleford, the Town of Picture Butte, and considering the results from the three communities altogether.

Ordinal regression[5] models were executed as the third step of the statistical analysis. The independent variables employed in the models are those that were found to have statistical significance in the tests described in step No. 2. The dependent variable, as in the prior tests, is the factor 'Opposition towards hosting the facilities at 8 km'.

Considering the results of the three communities together, four ordinal regression models were created using the data of the landfill, and one was obtained employing the information of the airport. Meanwhile, for each one of the communities involve in the study, two landfill models, and one airport model were produced.

Together with the ordinal regression analysis several other tests were performed to establish whether the data are inconsistent with the fitted model. Chi-Square-based statistics (Pearson, and Deviance tests) are provided in the goodness of fit tests results. Pseudo-R^2 is another tool employed to measure the proportion of variance in the dependent variable associated with the independent variables. The methods utilized for this specific task are the Cox and Snell R^2, Nagelkerke R^2 and McFadden R^2 tests (SPSS, 1999).

3.3.3 Publications Research

An investigation in three different newspapers that circulate in the area under study was conducted to determine whether the occurrence of past events could unfavorably or satisfactorily affect locating the LULUs selected for the study. The search for meaningful information in the publications selected spans for five years and eight months, from April 1995 to December 2000.

The newspaper selected to be examined were The Leader Post from the City of Regina, Saskatchewan, The Calgary Herald, which circulates in the City of Calgary, and The Lethbridge Herald from the City of Lethbridge. The publications from Regina and Calgary were chosen because they are the closest major urban areas to the County of Lethbridge. The newspaper from the City of Lethbridge was selected for the present study since it represents the main source of important events in the region.

The articles considered in selecting the significant criteria for the purposes of this investigation are listed in Table 3.1. These articles were chosen from a larger list of articles provided in Table B-5.1, Section B-5, Appendix B.

The results generated by the statistical analysis and by the newspaper research will be discuss in the following chapters.

3.3.4 Description of the Siting Criteria Selected

The criteria finally selected and implemented in the landfill and airport siting exercises are listed in Tables 3.2 and 3.3 respectively. A brief description of each criterion and its main characteristics will be also given in order to demonstrate and validate the importance of the criterion in the study.

Table 3.1 Condensed List of Articles Selected from the Newspapers

THE LETHBRIDGE HERALD

Article No.	Name of Article	Date of Publication	Page	Description
	CITY OF LETHBRIDGE ARTICLES			
	Crime Articles			
	Other Related Articles			
276	City Crime Moves Up	Thursday August 1st., 1996	A-1	-
	Health Related Articles			
	Other Related Articles			-
895	Lives at Risk Because of Ambulance Shortages	Monday February 7th., 2000	A-5	Letter to the Editor
952	Code Red Study Not Needed, Time for City Council to Act	Monday March 27th., 2000	A-6	-
964	Code Red: Council Looks at Solutions	Monday April 17th., 2000	A-1	Ambulance Services in the City of Lethbridge
				-
	Articles Related to Social Issues			-
	Other Related Articles			
893	River Valley Our City's Special Jewel	Monday February 7th., 2000	A-1	-
				-
	Development Articles			
	Construction Articles			
604	City Set for Another Booming Building Year	Tuesday April 7th., 1998	A-1	-
727	City Construction on Record Pace Again	Wednesday April 14th., 1999	B-6	-
978	City Construction Remains Strong	Wednesday May 10th., 2000	B-6	-
	Hog Plant Issue			
404	Bringing Home the Bacon! Taiwanese Pork Processor Will Create 800 Jobs in the City	Thursday June 5th., 1997	A-1	-
405	Hog Plant Key to South's Farm Success	Thursday June 5th., 1997	A-1	-
406	The Asian Connection Pays Off	Thursday June 5th., 1997	A-1	-
407	Sewage a Major Issue for Plant	Thursday June 5th., 1997	A-2	-
408	Politicians Share One Thing: They Like Great Economic News	Thursday June 5th., 1997	A-2	-
410	More 'NIMBY' Comments Expected on Hog Plant	Friday June 13th., 1997	A-16	-
413	City Calls Halt to Residential Proposal	Tuesday June 17th., 1997	A-1	-
421	City Officials Hopeful Taiwanese Will Be Sold on City Potential	Tuesday July 1st., 1997	A-1	-
422	City Woes Taiwanese Investors	Friday July 4th., 1997	A-1	-
424	Hog Plant Process Jumps Through Big Hoops	Saturday July 12th., 1997	A-1	-
425	Chamber Waves Pork Plant Flag	Thursday July 17th., 1997	-	House of Stran or House of Bricks Debate Continues on Viability of Taiwanese Hog Slaughtering Operation
426	Reader Wants His Property Rezoned to Take Advantage of Hog Plant Windfall	Saturday July 19th., 1997	A-8	Letter to the Editor (Not in Favor)
427	Hog Plant on Council's Plate Next Monday	Tuesday July 22nd., 1997	A-1	-
428	Hog Plant Questions Need to Be Answered	Tuesday July 22nd., 1997	A-10	Letter to the Editor (Not in Favor)
429	Fears of Hog Plant's Smell Overblown	Wednesday July 23rd., 1997	A-12	Letter to the Editor (In Favor)
430	Hog Plant Needs a Plebiscite	Thursday July 24th., 1997	A-14	-
432	Webbed Crusader Battles 'Carpenter's Curse'	Friday July 25th., 1997	A-1	Retired Teacher Hits the Net to Protest Hog Plant Plans
433	Red Deer Embraces Hog Expansion	Saturday July 26th., 1997	A-1	(In Favor)
434	Why is Hog Plant Decision Rush to an Early Conclusion?	Saturday July 26th., 1997	A-7	-
435	Speaking of Hogs	Sunday July 27th., 1997	A-5	-

Article No.	Name of Article	Date of Publication	Page	Description
436	Hog Plant not Burning Issue in Red Deer	Monday July 28th., 1997	A-1	-
437	Alberta Pork Market Set to Boom	Monday July 28th., 1997	A-3	-
438	Fletcher's in the Line for Major Expansion	Monday July 28th., 1997	A-3	Hogs
439	Reed Deer County Laws Support Producers	Monday July 28th., 1997	A-3	-
440	Council's Pork Bellyache	Tuesday July 29th., 1997	A-1	-
442	Checking Which Way the Wind is Blowing	Tuesday July 29th., 1997	A-3	Hogs
443	You Can't Tell By the Smell in Red Deer	Tuesday July 29th., 1997	A-3	-
444	Get the Hog Plant Going	Tuesday July 29th., 1997	A-9	-
445	A Modest Suggestion	Tuesday July 29th., 1997	A-9	-
446	Rezoning Approval Pushes Hog Plant to the Next Stage	Wednesday July 30th., 1997	A-1	-
448	Hog Plant: Keep it Public	Wednesday July 30th., 1997	A-10	Letter to the Editor (Not in Favor)
449	Please Put the New City Hall Downwind	Wednesday July 30th., 1997	A-10	Letter to the Editor (Not in Favor)
450	Approval Can't Guarantee Trouble-Free Hog Plant	Wednesday July 30th., 1997	A-10	Letter to the Editor (Not in Favor)
452	Hog Talk Must Consider Environment	Friday August 1st., 1997	A-12	-
453	Where Was Yuan Yi Livestock Presence	Friday August 1st., 1997	A-13	-
454	City Lands Wholesale Operation	Saturday August 2nd., 1997	A-1	Hogs
455	Hog Plant: Is the Best You Can Do?	Saturday August 2nd., 1997	A-10	Letter to the Editor (Not in Favor)
456	Logics, Facts and Hog Plant	Saturday August 2nd., 1997	A-10	Letter to the Editor (In Favor)
457	Bylaws Bridle Uncontrolled Hog Expansion	Tuesday August 5th., 1997	A-1	-
458	Hog Plant: A Few Additional Points	Tuesday August 5th., 1997	A-10	Letter to the Editor (Describing and Addressing Potential Risks in the Situation)
459	Three Cheers for Plant Jobs	Tuesday August 5th., 1997	A-10	Letter to the Editor (In Favor)
460	Plant Helps City Serve Region	Tuesday August 5th., 1997	A-10	Letter to the Editor (In Favor)
463	Just What Do Red People Know?	Tuesday August 12th., 1997	A-8	Letter to the Editor (Not in Favor)
464	Low Lifes? Not Around Here!	Wednesday August 13th., 1997	A-9	Letter to the Editor (In Favor)
465	Packers Too, Are Solid Citizens	Wednesday August 13th., 1997	A-9	Letter to the Editor (In Favor)
466	Meeting A Didsummer Night's Fiasco	Friday August 15th., 1997	A-12	-
467	Highway Projects Speed On	Saturday August 16th., 1997	A-1	-
468	City Trims the Bacon from Hog Profits	Saturday August 16th., 1997	A-1	-
469	City Offer Yuan Yi Deals to Build Here	Saturday August 16th., 1997	A-3	-
470	Council to Decide on Pork Plant	Monday August 25th., 1997	A-3	-
471	Hog Plant Hits Hurdle as Land Sale Stumbles	Tuesday August 26th., 1997	A-1	-
472	Hog Plant More Harm Than Good	Wednesday August 27th., 1997	A-13	Letter to the Editor (Not in Favor)
473	Hog plant Falls into a Legal Mire	Saturday August 30th., 1997	A-1	(Not in Favor)
474	City Approves Land Sale for Pork Plant	Saturday August 30th., 1997	A-3	(Favor)
475	On Extending Yuan Yi a Positive Welcome	Saturday August 30th., 1997	A-7	-
476	Dear City ... If You Want the Plant	Tuesday September 2nd., 1997	A-10	Hogs (Not in Favor)
477	Hog Plant Moves Next Phase	Wednesday September 3rd., 1997	A-1	(But There Will Be no Public Hearing)
478	Plant's Initial Will be 1,500 Hogs Daily	Wednesday September 3rd., 1997	A-1	-
479	Environmental Group Raises New Issues on Yuan Yi proposal	Thursday September 4th., 1997	A-1	-
480	Hog Plant Suit a Campaign Opener for 98	Thursday September 4th., 1997	A-1	-
481	Keep Politicians Out of Pork	Thursday September 4th., 1997	A-11	Letter to the Editor (In Favor)
482	Full Hog Plant Impact not Revealed	Thursday September 4th., 1997	A-11	Letter to the Editor (Not in Favor)
483	Study Needed Before Site Chosen	Monday September 8th., 1997	A-1	Letter to the Editor
484	Chamber Backing Hog Plant	Tuesday September 9th., 1997	A-1	Controversy May Damage Region's Long-Term Reputation
485	Yuan Yi Project Slips into the Court System	Wednesday September 10th., 1997	A-1	-
486	Fletcher's Gears Up for Growth	Wednesday September 10th., 1997	A-1	Red Deer Based Hog Plant Goes with Major Expansion
487	More Growth for South End	Thursday September 11th., 1997	A-1	Motel, Restaurants Set for Highway 4-5 Corner
488	Plant Opponents Offer no Guarantees, Either	Thursday September 11th., 1997	A-1D	Letter to the Editor (In Favor)
489	Hurray for The Hog Plant!	Thursday September 11th., 1997	A-11	Letter to the Editor (In Favor)
490	Welcome to the City	Thursday September 11th., 1997	A-11	Letter to the Editor (In Favor)
491	Congrats on Lawsuit	Thursday September 11th., 1997	A-11	Letter to the Editor (Not in Favor)
492	Pork Boom Expected to Fatten Alberta Economy	Friday September 12th., 1997	A-1	-
493	Yuan Yi Turns Sod on Plant; Lauds City as the Place to Be	Friday September 12th., 1997	A-1	Legal Action Left in Dust for the Day as Officials Cheer on Development
495	Business, Step Forward	Friday September 12th., 1997	A-9	Favor (Hogs)
497	The Perils of Sod Secrets	Saturday September 13th., 1997	A-7	Not in Favor (Hogs)
498	Negativity of 'Minority' may Sink Future Prosperity	Tuesday September 16th., 1997	A-9	Letter to the Editor (In Favor) Hogs

Article No.	Name of Article	Date of Publication	Page	Description
499	With Yuan Yi, Some Future Hope	Wednesday September 17th., 1997	A-10	Letter to the Editor (In Favor) Hogs
500	Hog Plant Supporters Have a Comrade	Tuesday September 23rd., 1997	A-10	-
502	Plenty of Reasons to Welcome Yuan Yi Here	Saturday September 27th., 1997	A-8	-
503	Hog Plant Views Can Be Aired at Forums	Tuesday September 30th., 1997	A-3	-
504	Hog Plant Will Hurt Tourism	Wednesday October 1st., 1997	A-1	Letter to the Editor
508	Citizen's Group Still Would Like an Environmental Impact Study	Thursday October 16th., 1997	A-12	Letter to the Editor (Not in Favor)
515	Petition Merely Requested a Hog Study	Wednesday October 22nd., 1997	A-10	-
516	Hog Farms the Real Mess	Wednesday October 22nd., 1997	A-10	Letter to the Editor (Hog Problems with Manure in Picture Butte)
517	Federal Aid Request May Force Hog Plant Study	Monday October 27th., 1997	-	-
518	Feds Promise Review of Yuan Yi Hog Plant	Thursday October 30th., 1997	A-1	-
520	Next to Bat: Yuan Yi	Thursday October 30th., 1997	A-12	-
522	City Decides Treatment Plant Better Locale for Yuan Yi Tank	Tuesday November 4th., 1997	A-3	-
523	Yuan Yi Investment: Good or Bad?	Wednesday November 5th., 1997	A-1	(Not in Favor)
524	Yuan Yi 'Bad Deal' for City	Friday November 7th., 1997	A-1	(Not in Favor)
525	Greenlight for Yuan Yi	Thursday November 13th., 1997	A-1	Hog Plant May Proceed, Says Alberta Environment
526	Hog Plant Make Financial Sense	Friday November 14th., 1997	A-16	Letter to the Editor (In Favor)
527	Lets Get On with the Hog Plant	Wednesday November 19th., 1997	A-12	Letter to the Editor (In Favor)
530	Chamber Says Walk the Walk; Urges Support for Yuan Yi	Wednesday December 3rd., 1997	A-1	-
531	Environment Officials Back Hog Review	Saturday December 6th., 1997	A-1	Experts at Environment Canada
534	MPC Giving Little Room to Move on Yuan Yi	Monday December 8th., 1997	A-1	-
535	A middle Ground Must Be Found in the Growing Hog Plant Controversy	Monday December 8th., 1997	A-1	-
536	Hog Plant Foes Lose Court Bid	Tuesday December 9th., 1997	A-1	-
537	Yuan Yi Subsidy Growing	Tuesday December 9th., 1997	A-12	-
538	We're Weary of Lawsuits	Wednesday December 10th., 1997	A-8	Favor (Hogs)
539	Hog Plant Approved	Thursday December 11th., 1997	A-1	-
541	Hog Plant Debate Still Hot Topic	Friday December 12th., 1997	A-1	-
544	A Yuan Yi Christmas Present: A Welcome Wrapped in a Warning	Thursday December 18th., 1997	A-16	-
545	Divisiveness Hogged Stage	Wednesday December 24th., 1997	A-16	Letter to the Editor (In Favor)
546	The Connection Between Yuan Yi and the Indonesian Forest Fires	First Section: Tuesday December 30th., 1997 Second Section: Wednesday December 31st., 1997	A-8	-
559	Yuan Yi Plant Gets Hit by Asian Crisis	Saturday June 24th., 1998	-	(Not in Favor)
560	Yuan Yi Lawsuit Goes to Appeal	Wednesday January 28th., 1998	A-8	-
561	Yuan Yi's Time to Come Clean	Wednesday January 28th., 1998	A-3	(Not in Favor) Rumor About Quitting
563	Environmentalist Adds His Voice to Call for Hog Plant Impact Study	Thursday January 29th., 1998	-	David Suzuki Calls for an Environmental Impact Assessment
574	Yuan Yi Plant Still a Go, Mayor Says	Saturday February 14th., 1998	A-1	Hog Plant
575	Yuan Yi Holding on Despite Delays	Saturday February 14th., 1998	A-9	-
577	Was Hog Plant Pushed by Political Pressure?	Thursday February 26th., 1998	A-12	Letter to the Editor
581	City Ignores Social Aspects of Hog Plant	Wednesday March 18th., 1998	A-10	Letter to the Editor
584	Yuan Yi Yanks Hog Plant Out of the City	Saturday March 21st., 1998	A-1	-
585	Hog Plant Supporters, Critics Ponder Outcome of Process	Saturday March 21st., 1998	A-2	-
586	Chamber Press Blasts Hog Plant Opponents	Saturday March 21st., 1998	A-2	-
589	Hog Plat's 'Brass Ring' More Like a Sow's Ear	Wednesday March 25th., 1998	A-14	Letter to the Editor
588	City Council Mull Over Next Step	Tuesday March 24th., 1998	A-1	On the Heels of Yuan Yi's Pull-Out Politicians Ponder Course of Action
590	A Thousand Apologies Required	Wednesday March 25th., 1998	A-14	Letter to the Editor
591	Responsible Industry Accepts Environmental Controls	Wednesday March 25th., 1998	A-14	Letter to the Editor
592	The Majority Wanted the Plant	Wednesday March 26th., 1998	A-11	Letter to the Editor
593	Democracy Must Work for Both Sides in Debate	Wednesday March 26th., 1998	A-11	Letter to the Editor Hog Plant
594	Even Four People Have the Right to Challenge Government	Wednesday March 26th., 1998	A-11	Letter to the Editor Hog Plant
595	Hold the Punches Next Time Around	Thursday March 26th., 1998	A-11	Editor Comment
596	Learning the Lessons Offered by the Yuan Yi Experience	Friday March 27th., 1998	A-16	Letter to the Editor
597	Things Are not Always as They Seem to Be	Friday March 27th., 1998	A-16	Letter to the Editor
598	Where Does the City Go from Here? What Does a City do After it Loses a Business Investment	Saturday March 28th., 1998	A-1	-
599	Pondering the Yuan Yi Hog Debacle: It Was Simply a Problem of not Understanding the Community	Saturday March 28th., 1998	A-6	-

Article No.	Name of Article	Date of Publication	Page	Description
600	Getting the Facts of the Matter Out	Saturday March 28th., 1998	A-6	Lethbridge Major Offers a Detailed Look at the Yuan Yi Project
601	Gang of Four Must be Proud of Itself	Saturday March 28th., 1998	A-7	Letter to the Editor
605	Vendetta Seems to Be Part of Hog Opposition	Tuesday April 7th., 1998	A-8	Letter to the Editor
607	If not Yuan Yi's Plant, Why not Try Hemp-Based Industry	Wednesday April 15th., 1998	A-12	Letter to the Editor
608	Some Further Points on the Yuan Yi Plant	Wednesday April 15th., 1998	A-12	Editor Comment
609	Reader Says Plant Opponents Should Go Back to Sleep	Wednesday April 15th., 1998	A-12	Letter to the Editor
610	Why is Plant on Its Way to Edmonton	Wednesday April 15th., 1998	A-12	Letter to the Editor
611	What Would Study had Shown us?	Wednesday April 15th., 1998	A-12	Letter to the Editor
612	In the Wake of Yuan Yi, Where Are All Clean Industries?	Wednesday April 15th., 1998	A-12	Letter to the Editor
637	Anti-Yuan Yi Drops Land Deal Appeal	Wednesday July 1st., 1998	A-1	-
	Other Related Articles			-
874	Lethbridge Still Low Tax Master	Tuesday January 25th., 2000	A-1	City Levels Among Lowest in Canada, Survey Indicates
1025	Local Jobless Rate Continues Below Five Percent	Saturday July 4th., 2000	B-7	Lethbridge-Medicine Hat Area Rate 4.7 %
	Environment			
	Landfill Issue			
22	City's Landfill Plans may Go up in Smoke	Thursday April 13th., 1995	-	-
42	City's Landfill Crisis could be over	Monday May 8th., 1995	-	-
131	City Unveils Landfill Site	Thursday September 21st., 1995	A-1	-
132	Stakeholders Supports Proposed Regional Landfill Site	Thursday September 21st., 1995	A-3	-
142	No Transfer Station, No Landfill,' City Told	Thursday October 5th., 1995	A-3	-
147	Landfill Battle Goes Public	Sunday October 15th., 1995	A-5	-
187	Council Considers Landfill Changes	Saturday February 3rd., 1996	A-3	-
199	County Dumps Proposal for Partnership	Tuesday February 13th., 1996	A-1	-
200	Environmental Concerns Kill Dump Site	Wednesday February 14th., 1996	A-1	-
223	Garbage on Ice	Monday April 15th., 1996	A-4	-
248	City Dump Gets Breathing Space	Friday May 31st., 1996	A-1	-
251	Landfill Countdown	Saturday June 1st., 1996	A-3	-
255	In the Dumps	Tuesday June 4th., 1996	A-3	-
391	Province Happy with New Management at Landfill	Wednesday April 30th., 1997	A-3	-
447	Crowsnest Landfill to Get Extension	Wednesday July 30th., 1997	-	-
	Wastewater			
382	City Sewage Release Exceeds Levels	Friday April 4th., 1997	A-3	-
412	Yellow Flag on Sewage Plant Sale	Tuesday June 17th., 1997	A-1	-
685	City Cut Sewage Phosphorus by 90%	Friday January 8th., 1999	B-5	
753	New Equipment at Sewage Plant Uses UV Rays to Clean the Water	Monday June 28th., 1999	A-1	
1024	Blame City not Livestock for Water Pollution	Friday July 7th., 2000	A-6	Letter to the Editor
1048	Contaminant Levels High in City's Run Off Water	Friday August 25th., 2000	A-1	
1089	New Sewer Utility Proposed	Wednesday November 23rd., 2000	A-1	Undersized Storm Sewer
	Water Treatment			
46	Water Scare Short Lived	Wednesday May 10th., 1995	-	-
201	Trouble with Water Purity Boils Again	Thursday February 15th., 1996	A-1	-
246	Boil Water Orders	Saturday May 25th., 1996	A-4	Letter to the Editor
614	Water Supply Plan Runs into Dead End	Friday April 24th., 1998	A-1	-
693	City's Water Treatment Plant Cleaning Up	Sunday January 24th., 1999	-	-
820	Water Quality Specialist on Board	Tuesday December 14th., 1999	B-6	-
	Hazardous Waste			
399	Don't Toss Toxic Waste	Thursday May 22nd., 1997	A-1	-
	VILLAGE OF BARONS			
699	Barons Braces for School Closure	Wednesday February 10th., 1999	A-3	-
701	Barons Parents Hope to Save Their School	Friday February 12th., 1999	A-1	-
832	Barons School Facing Closure Once Again	Friday January 7th., 2000	A-1	-
846	Barons School Closure Process Begins: Superintendent	Wednesday January 12th., 2000	A-4	-

Article No.	Name of Article	Date of Publication	Page	Description
901	Parents Hope to Save Off Barons School Closure	Friday February 11th., 2000	-	-
946	Barons School Will Close After All	Wednesday March 15th., 2000	A-3	-
1010	School's Out Forever	Wednesday June 28th., 2000	A-1	Barons School Closed
1014	Sad Farewell for Barons School	Thursday June 29th., 2000	A-8	-
	TOWN OF COALHURST			
145	Coalhurst Poised to Make Election History	Friday October 13th., 1995	A-3	First Municipal Election for a Major After Achieving Town Status
148	Edge Combe-Green Coalhurst's First Elected Mayor	Tuesday October 17th., 1995	A-1	-
	TOWN OF COALDALE			
	Development Articles			
358	Cost of Living on Rise in Town of Coaldale	Friday January 17th., 1997	A-4	-
289	Clearing the Air in Coaldale	Saturday August 24th., 1996	A-4	Letter to the Editor About Incinerator (Not in Favor)
291	Coaldale Residents Get Second Hearing on Incinerator	Tuesday August 27th., 1996	-	-
293	Incinerator Plan May 'Tire Early'	Thursday August 29th., 1996	A-1	-
294	Treading Lightly on Incineration	Thursday August 29th., 1996	A-4	Letter to the Editor
303	Petition Opposes Incinerator in Coaldale	Wednesday September 11th., 1996	A-1	-
374	Coaldale to Hold Second Hearing	Saturday February 15th., 1997	A-5	-
375	Keeping Ahead on Coaldale's Tax Issue	Friday March 14th., 1997	-	-
547	Coaldale Residents Face Tax Increase	Wednesday December 31st., 1997	A-4	-
549	Coaldale Tax Increase: Do the Math	Wednesday January 7th., 1998	A-10	Letter to the Editor
551	Coaldale Tax Facts Wrong; A Clarification Is Offered	Thursday January 15th., 1998	-	Letter to the Editor
554	Provincial Cuts to Blame for Coaldale Tax Hike, Says Major	Wednesday January 21st., 1998	A-4	-
	Other Articles Related with the Town of Coaldale			
656	Coaldale Water a Little Yucky	Thursday September 17th., 1998	A-1	-
700	Coaldale Folk Keen to Sip City Water	Friday February 12th., 1999	A-1	-
805	Coaldale Up in Arms over Possibility of ER Closure	Friday November 19th., 1999	A-1	-
806	An Emergency in Coaldale	Saturday November 20th., 1999	A-7	Editor
808	Coaldale Needs Its Emergency Clinic	Wednesday November 24th., 1999	A-8	Letter to the Editor
871	Coaldale Waits to Hear ER's Fate	Sunday January 23rd., 2000	A-1	-
896	Coaldale Needs Emergency Department	Monday February 7th., 2000	A-5	Letter to the Editor
900	Coaldale Opens Office to Save ER Campaign	Friday February 11th., 2000	A-1	-
910	Hundreds Rally for ER	Thursday February 17th., 2000	A-1	Fears Remain in Coaldale Despite Order to Holdback on CHR Plan
920	Coaldale Chamber Battling to Save ER	Tuesday February 29th., 2000	A-9	Letter to the Editor
1022	Coal ER Will Stay Open	Thursday July 6th., 2000	A-1	Long-Term Care Will Continue as Main Focus of Health Centre
957	Coaldale Census Will Show Robust Growth	Saturday April 1st., 2000	A-3	McCain's Plant Key Driving Force Behind New Developments, Diversified Population
	TOWN OF MAGRATH			
923	Meeting to Discuss Magrath ER	Wednesday March 1st., 2000	A-4	-
935	Magrath Hopeful But Wary When It Comes to Their ER	Sunday March 12th., 2000	A-1	-
	VILLAGE OF MONARCH			
602	Requiem for a Dying Prairie Community	Friday April 3rd., 1998	-	Letter to the Editor
740	Residents Pulling Together in Forgotten Town of Monarch	Wednesday June 2nd., 1999	A-4	-
956	Monarch Christian School Celebrates New Building	Saturday April 1st., 2000	A-3	-
	VILLAGE OF NOBLEFORD			
401	Nobleford Set to Growth	Wednesday May 28th., 1997	A-6	-
	TOWN OF PICTURE BUTTE			
529	Boiling in Butte: Town Bit By Bug	Wednesday December 3rd., 1997	A-1	Boil Water Hits Another Community

Article No.	Name of Article	Date of Publication	Page	Description
533	Butte Folks Hope to Toast Holidays with a Glass of Good Tap Water	Monday December 8th., 1997	A-1	-
	VILLAGE OF SHAUGHNESSY			
507	To Boil…or Not to Boil…	Thursday October 16th., 1997	A-1	Shaughnessy (Boil Water)
509	Shaughnessy Still Stuck with Water Contamination	Friday October 17th., 1997	A-1	-
519	Clean Water Flows Again in Shaughnessy	Thursday October 30th., 1997	A-1	-
	COUNTY OF LETHBRIDGE			
625	County of Lethbridge Goes Back to Livestock Tax Well Idea	Tuesday June 9th., 1998	A-1	Get Taxes form Livestock Operations
629	County Council's Tax Efforts Based on Fairness, Equity	Saturday June 13th., 1998	A-7	Editor Note
664	County Forges Ahead with New Business Tax	Tuesday October 6th., 1998	A-1	-
668	Tax Debate Swirls on in County	Friday October 9th., 1998	A-1	-
799	County of Lethbridge Again Backtracks on feedlot Tax	Friday November 5th., 1999	A-4	-
800	Residents Upset over Lack of Feedlot Tax	Saturday November 6th., 1999	A-3	County's Decision Points to Systematic Discrimination Says Acreage Owner
1027	Group May Take Legal Action Against County	Friday July 14th., 2000	A-1	SAEG Considers Going to Court Over Feedlot Permits
1030	Feedlot Farmer Duel Over Plans	Tuesday July 18th., 2000	A-3	Appeal Board Hears Arguments on Van Raay Expansion
1037	County Board Turns Down Feedlot Plan	Monday July 31st., 2000	A-1	-
1061	Proposed Hog Farm Gets Thumbs Down	Thursday September 7th., 2000	A-1	County of Lethbridge, Near Turin
1064	Board Was Right to Reject Hog Farm	Monday September 11th., 2000	A-8	Letter to the Editor
631	Board Gives Green Light to Feedlot	Friday June 19th., 1998	A-14	County Rejects Neighbors' Appeal of New Project
1034	County is Dragging Its Feet on Feedlot Alley Issues	Sunday July 23rd., 2000	-	
684	McCain Chooses County. Potato Processor Snubs MD of Taber, Will locate Outside Chin	Friday January 8th., 1999	A-1	County of Lethbridge
686	Cheers All Around for McCain. Spud Plant Will Fuel Economy in the County and Elsewhere	Saturday January 9th., 1999	A-1	-
688	McCain Plant Could Become Largest Chip on the Block	Thursday January 14th., 1999	A-1	-
692	City Council Will Ponder Water Pipeline Deal	Saturday January 23rd., 1999	-	Coaldale Fry Plant Would Enjoy Steady Supply of Lethbridge Water
697	City May Let Water Flow East for Cash	Tuesday February 9th., 1999	-	To the Town of Coaldale to the McCain Plant
796	Local Firm Win Contract to Build McCain Complex	Thursday October 14th., 1999	B-5	-
703	Potato Facts Highlight Open House on McCain's New Potato Plant	Saturday February 13th,, 1999	-	-
704	New Housing Project Designed with McCain Workers in Mind	Wednesday February 17th., 1999	-	-
705	Potato plant Resurrects Water Pipeline Plan	Saturday February 20th., 1999	B-4	-
720	Stop the Rumor! McCain Still Coming	Friday March 19th., 1999	A-1	-
728	McCain Clears Another Hurdle	Friday April 16th., 1999	A-1	-
729	Quality Control A key Part of French Fry Part	Monday April 19th., 1999	A-1	-
742	McCain Plant Gets the Green Light	Friday June 11th., 1999	B-6	From Alberta Environment
760	McCain Plant Speeding Along on Schedule	Saturday July 3rd., 1999	B-4	-
792	McCain Potato Plant on Schedule	Wednesday September 22nd., 1999	B-5	-
797	Dec. 31 Completion Set for Water Link	Thursday October 28th., 1999	-	Coaldale, McCain's Plant to Get City Water in New Millennium
812	McCain Job Fair Goes December 10,11	Friday December 3rd., 1999	B-6	For People to Be hired in Southern Alberta
818	Thousands Apply for McCain Jobs	Sunday December 12th., 1999	A-3	-
913	McCain Plant Scheduling Production Tests for March	Saturday February 19th., 2000	B-6	-
928	McCain Begins Hiring for New Plant at Chin	Thursday March 2nd., 2000	-	-
958	McCain Complete Hiring of 100 for First Shift Work	Thursday April 6th., 2000	A-3	-
974	McCain Gives $ 86,000 to Coaldale Library	Wednesday May 3rd., 2000	A-1	-
1039	Water Pipeline the Best Solution	Saturday August 5th., 2000	A-7	Editor Comment
1041	McCain Plant's Official Opening Set for September 21st.	Wednesday August 9th., 2000	B-6	-
1068	McCain's officially Opens	Friday September 22nd., 2000	A-1	-
1069	New McCain Plant Good News for Growers	Friday September 22nd., 2000	B-8	-
1070	Potato Processing Operations Boost Area's Economic Activity	Saturday September 23rd., 2000	B-8	-
1086	McCain's Slow Payment Has Firms Boiling	Tuesday November 14th., 2000	A-1	-
1087	McCain Detractors in Minority	Sunday November 19th., 2000	A-4	Letter to the Editor
726	Water Quality Top Priority	Wednesday April 14th., 1999	B-5	-
798	County Residents Face Higher Fees for Water Supply	Wednesday November 3rd., 1999	A-1	-
1031	County Seeks Input on Plan to Pipe Water from Lethbridge	Wednesday July 19th., 2000	A-1	Plan More Cost Efficient than Upgrading Treatment Plants

Article No.	Name of Article	Date of Publication	Page	Description
1038	County Opts for City Water	Friday August 4th., 2000	A-1	Shaughnessy, Diamond, Turin, Iron Springs
1072	Liquid Hog Manure Raises Health Fears	Wednesday October 18th., 2000	-	In MD
1076	MD Board Overturns Liquids Manure Decision	Wednesday October 25th., 2000	A-4	-
	REGIONAL ARTICLES			
	Economic Development Articles			
	Employment Articles			
570	South Jobless Rate Plummets to Six -Year Low	Saturday February 7th., 1998	-	-
646	Jobless Rate Hits Eight-Year Low in Region	Saturday September 5th., 1998	-	-
674	Area's Jobless Rate Best in Province	Saturday November 7th., 1998	B-7	-
763	Jobless Rate Takes a Dive	Saturday July 10th., 1999	A-1	Area Unemployment at 3.7 Percent
813	Jobless Rate Down Yet Again	Saturday December 4th., 1999	A-1	Unemployment in City at 4.2%, Lethbridge-Medicine Hat Region 5.2 %
833	Area Jobless Rate Ties All-Time Low	Saturday January 8th., 2000	A-1	And Employment Future Looks Bright as More Jobs Expected in Southern Alberta Soon (3.6 % Rate)
892	South Boasts Alberta's Lowest Jobless Rate	Saturday February 5th., 2000	B-6	Southern Alberta 4.3 %
977	Jobless Rate Rises Slightly in Alberta	Saturday May 6th., 2000	A-1	Lethbridge-Medicine Hat Area Rate 5.2 %
999	Jobs, Unemployment Both Climb in May	Saturday June 10th., 2000	A-3	Lethbridge-Medicine Hat Rate 5.4 %
	Other Issues or Topics			
1109	CHR Officials Issue Boil-Water Order for Taber	Thursday December 21st., 2000	A-1	-
1110	Taber Boil-Water Order Lifted Just in Time for Holidays	Saturday December 23rd., 2000	A-1	-
1111	Officials Deserve Applause for Quick Boil Water Order	Saturday December 23rd., 2000	A-6	Letter to the Editor
	Health Related Articles			
	Rural ERs Closure			
882	Rural ER's May Close, MLA Says	Monday January 31st., 2000	A-1	
883	Closing ER's Not a Solution	Monday January 31st., 2000	A-6	Editor Comment
903	Save Our ER Forums Still On	Sunday February 13th., 2000	A-1	-
904	CHR Plan on Hold for Now	Saturday February 12th., 2000	A-1	Minister Ask Officials to Postpone Any Rural Changes
906	Doctor's Claim CHR Betrayal	Tuesday February 15th., 2000	A-1	Physicians Say Emergency Cutbacks Are Threatening People's Health
916	CHR in Wrong Direction	Thursday February 24th., 2000	A-6	Long Term Health Care for Seniors
918	Rural Closures Will Be Felt in Lethbridge Too	Saturday February 26th., 2000	A-6	Letter to the Editor
924	ER Closures Would Put Lives at Risk	Wednesday March 1st., 2000	A-6	Rural Residents Riled
925	Needs of Rural Residents Being Ignored	Wednesday March 1st., 2000	A-6	Rural Residents Riled
926	Drs. Target the Wrong Group	Wednesday March 1st., 2000	A-6	Rural Residents Riled
932	Public Has Right to Know What CHR is Doing	Thursday March 9th., 2000	A-6	-
933	Rural ER's Are Safe: CHR	Saturday March 11th., 2000	A-1	-
	Articles Related to Employment			
550	Southern Alberta's Jobless Rate Hits New Low	Saturday January 10th., 1998	A-1	-
	Environment			
	Wastewater			
416	Livestock, Water Prove a Though Mix	Friday June 20th., 1997	A-1	-
513	Action Needed on Dirty Water	Monday October 20th., 1997	A-12	-
	Water Treatment			
414	Water Debate Set to Boil	Wednesday June 18th., 1997	A-1	-
415	Water is Brown as Chocolate	Thursday June 19th., 1997	A-1	-
	Solid Waste			
579	Regional Centres Plan to Share Landfill Space	Thursday March 12th., 1998		-

Article No.	Name of Article	Date of Publication	Page	Description
	Feedlots, Livestock and Cattle Manure			
501	Health Region Recognizes Livestock's Impact on Area	Friday September 26th., 1997	A-1	-
578	Operators Irate at New Feedlot Halt	Wednesday March 4th., 1998	A-1	-
613	Feedlot Alley not on List	Thursday April 16th., 1998	A-1	Live stock Meetings Dates Don't Include Locations in Picture Butte-Monarch Area
630	Feedlots: Enough Is Enough	Thursday June 18th., 1998	A-8	-
638	Feedlot Approval a Triumph for Short-Sighted Economies	Saturday July 4th., 1998	A-6	-
639	Another Family Appeals for Stop to Feedlot Plan	Thursday August 6th., 1998	A-1	-
640	Time for Feedlots to Pay the Piper	Tuesday August 11th., 1998	A-6	-
642	Appeal to Stop Feedlot Expansion Fails	Saturday August 22nd., 1998	A-1	-
643	Feedlot Industry's Black Eye not Deserved, Says Minister	Saturday August 22nd., 1998	B-6	-
654	Rick Wants to Wear a White Hat, but Feedlots Have Long Way to Go	Tuesday September 15th.,1998	A-8	-
655	Controls Needed Now on Feedlot Operations	Wednesday September 16th., 1998	-	Letter to the Editor
666	Feedlot Operator Takes Aim at New Tax	Wednesday October 7th., 1998	A-1	Turin Feeders Boss Says Industry Has Been Unfairly Targeted by County
681	Livestock Operators Join Forces to Challenge New Business Tax	Wednesday December 16th., 1998	A-1	-
730	Residents Applying to Fight Feedlot-tax Court Challenge	Thursday April 22nd., 1999	A-1	-
735	Dairy Farmer Sees Manure as Resource, not Nuisance	Monday May 17th., 1999	B-4	-
773	Feedlots Feeding Local Economy, Cattle Industry Generating 1740 Jobs, $ 216 Million Spin Off a Year for the City and Area	Saturday August 7th., 1999	B-5	-
803	Feedlots Big Boost to Local Economy	Tuesday November 16th., 1999	A-8	Letter to the Editor
880	Protecting Water Quality, Quantity in Best Interest of Cattle Feedlot Operators	Thursday January 27th., 2000	B-5	-
927	Compost Catching On with Feedlots, Public	Thursday March 2nd., 2000	B-5	-
979	feedlot Odour Study Begins Second Year	Saturday May 13th., 2000	B-5	-
994	Rules Needed for Feedlots	Monday May 29th., 2000	A-6	-
1016	Air Quality Study Says Feedlot Alley is O.K.	Friday June 30th., 2000	A-3	-
1028	Neighbors Protest 'Feed King's' Proposed New Site	Friday July 14th., 2000	A-3	-
1035	Feedlot Alley Reputation is an Embarrassment	Tuesday July 25th., 2000	A-6	Letter to the Editor
1044	Province to Review Study on Air Quality	Friday August 18th., 2000	A-1	Second Look at Odour in Feedlot Alley
1055	There's Something Smelly in the Feedlot Alley	Tuesday August 29th., 200	A-9	-
1059	Feedlot Alley is Full, Folks	Saturday September 2nd., 2000	A-7	About Heating (Negative)
1060	Something Smelly in Her Column	Wednesday September 6th., 2000	A-8	Letter to the Editor (Defending Feedlot Alley)

Article No.	Name of Article	Date of Publication	Page	Description
1063	Stories in Feedlot Alley Misleading	Friday September 8th., 2000	A-6	Letter to the Editor (In Favor) About County
1065	New Rules Necessary for Feedlots	Tuesday September 19th., 2000	A-8	Letter to the Editor
1067	Rural Life is a Good one, Feedlots, Livestock and All	Wednesday September 20th., 2000	A-7	Letter to the Editor in Favor

*Missing Days From December, 2000: 19,22, 25, 30, 31

THE REGINA LEADER POST

Article No.	Name of Article	Date of Publication	Page	Description
	LETHBRIDGE			
	General Articles			
4	2, 4-D Falling from the Lethbridge Sky	Friday February 26th., 1999	-	Study Finds Levels 10 to 50 Times Higher than at Other Areas in Canada

THE CALGARY HERALD

Article No.	Name of Article	Date of Publication	Page	Description
	LETHBRIDGE			
	General Articles			
12	Lethbridge Council Gives Zoning Approval to Hog Plant	Wednesday July 30th., 1997	C-9	-
13	Lethbridge Hog Plant Faces Zoning Battle	Saturday August 30th., 1997	-	-
18	Controversial Hog Plant in Jeopardy Says Owner	Saturday February 14th., 1998	A-4	-
20	Lethbridge Petition Targets Feedlot Tax	Saturday August 1st., 1998	A-4	-
21	McCain to Plant Potato Factory Near Coaldale	Friday January 8th., 1999	-	-
22	E. Coli Fears Prompt Appeal by Feedlot Neighbors	Thursday July 13th., 2000	A-9	-
23	Claresholm Landfill Opens this Fall	Friday July 21st., 2000	B-7	-
24	Environmental List Cheer Axing of Feedlot Plant	Saturday August 12th., 2000	B-4	-
25	Landfill Will Hold 100 Years of Trash	Thursday November 30th., 2000	B-8	Claresholm Area

Landfill Criteria

1) Minimum distance from any occupied residence or collection of 10 or more houses

This criterion is based on the idea of preventing any possible negative impacts towards the neighboring residents created by the landfill site. The buffering distance of 450 m is based on the Waste Management Regulation for the Province of Alberta (AR 250/85), which says that any potential landfill site should be located not closer than 450 m from a hospital, residence, restaurant or other place where food is prepared. Siddiqui et al. (1996), give a distance of 400 m as the minimum distance to any occupied residence or a collection of ten or more houses. Some of the possible detrimental impacts that this criterion tries to address are health impacts, odor impacts, and visual impacts.

For this constraint only those communities that appear in Figure C-1.2, Appendix C, Section C-1, were considered in the siting study.

2) Minimum distance from any airport runway used by piston, turbojet, or turbine engine aircraft

Birds can be a dreadful nuisance to any airport due to the potential risk that they pose to operational aircrafts. Birds represent the greatest threat to airplanes during landing and take off operations mainly because they can collide with the aircraft and cause severe damage to the fuselage or the engines.

Operational Landfills are a very appealing feeding ground to several species of birds due to the opportunity of finding discarded food at the active face. Birds on the vicinity of landfills do not represent a hazard for the facility operations, but they are considered as vectors for the spreading of deceases.

Table 3.2 Final Landfill Siting Criteria

I) ENVIRONMENTAL AND PHYSICAL CRITERIA

a) EXCLUSIONARY

CRITERIA, IMPACTS, AND OTHER ISSUES	DISTANCE/EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
1. Minimum distance from any occupied residence or collection of 10 or more houses	0.45 km	Only major communities were considered for this constraint	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter., (1996)
2. Minimum distance from any airport runway used by piston, turbojet, or turbine engine aircraft	1250 m (or 4 km*, 8 km**)	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter, (1996). United States Environmental Protection Agency, (1993)*. Transport Canada, Aviation, (1989)**
3. Minimum distance from a river, or a permanent body of water	0.8 km	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter., (1996)
4. Minimum distance from a public water supply, surface water intake	1.6 km	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter., (1996)
5. Facilities should not be allowed in recreational, cultural, aesthetic areas, key wild life habitat or high natural risk areas	Essential	-	Baban, Serwan M.J.; Flannagan, Joseph, (1998). Manitoba Hazardous Waste Management Corp., (1988)
6. Minimum distance from a railway line	500 m	-	Baban, Serwan M.J.; Flannagan, Joseph, (1998)
7. Minimum distance from a historic or archeological site	500 m	-	Baban, Serwan M.J.; Flannagan, Joseph, (1998)
8. Agricultural and forestry land uses	Do not take agricultural (CLI) classes 1, 2	Choose agricultural land with the lowest ranking in the Canadian Land Inventory	Baban, Serwan M.J.; Flannagan, Joseph, (1998). Manitoba Hazardous Waste Management Corp., (1988).Environment Council of Alberta, (1985). Environment Council of Alberta, (1981)
9. Minimum distance from a Geological fault	61 m	-	Manitoba Hazardous Waste Management Corp., (1988). United States Environmental Protection Agency (1993)

		Ambient concentration, Type of source, etc.	Zeiss, Chris and Atwater, James, (1993)
10. Air quality impacts	1. CH_4 concentrations below 5% in air 2. Odoriferous substances required up to 10,000 fold dilution of landfill gas 3. Vinyl chloride below 10 ppb 4. Maximum distance impact 500 m (only major communities were considered for this constraint)	1. Ambient ground level Concentration at a distance X from the landfill boundary: $$C_{(X)} = \frac{2q}{\sqrt{2\pi\,\sigma_z\bar{u}}}\exp\left[-\frac{1}{2}\frac{z^2}{\sigma_z^2}\right]$$	Zeiss, Chris and Atwater, James, (1993)
		2. For a finite line source: $$C_{(X,Y)} = \frac{2q}{\sqrt{2\pi\pi_z\bar{u}}}\left[\operatorname{erf}\left[-\frac{L/2-y}{\sqrt{2}\sigma_y}\right]+\operatorname{erf}\left[\frac{L/2+y}{\sqrt{2}\sigma_y}\right]\right]$$	Zeiss, Chris and Atwater, James, (1993)
		3. For the centerline concentration of y = 0 : $$C_{(X,0)} = \frac{2q}{\sqrt{2\pi\pi_z\bar{u}}}\operatorname{erf}\left[\frac{L}{2\sqrt{2}\sigma_y}\right]$$	Zeiss, Chris and Atwater, James, (1993)
		4. Virtual point source, area source: $$C_{(X,0,0)} = \frac{Q}{\pi\sigma_y\sigma_z\bar{u}}$$	Zeiss, Chris and Atwater, James, (1993)

b) NON EXCLUSIONARY			
1. Odor	1. Dilutions from 10,000 to 100,000 fold to reduce landfill gas to below the odor threshold. 2. 500 - 600 m from the boundary (only major communities were considered for this constraint)	1. If one or more odor complaints are initiated by residents of a community and are verified by local authorities	Zeiss, Chris and Atwater, James, (1993). Zeiss, Chris, (19 97)
		2. If 20 or more odor complains are initiated without verification	Zeiss, Chris and Atwater, James, (1993)
		3. If odors extend beyond the property limits of the source and occur more than once or last more than one day in any three months, and exceed any intensity of 7 dilutions to threshold as measured by the Barney-Cheney Scentometer	Zeiss, Chris and Atwater, James, (1993)
		4. Relationship of measured dilutions to concentration: $N_X = \frac{C_X}{C_T}$	Zeiss, Chris and Atwater, James, (1993)
		5. Required dilution from pure landfill gas to odor threshold: $N_{Thres} = \frac{C_{LF}}{C_T}$	Zeiss, Chris and Atwater, James, (1993)
		6. Required dilution to threshold: $N_{Thres} = N_0 * N_R = \frac{C_{LF}}{C_0} * \frac{C_0}{C_T}$	Zeiss, Chris and Atwater, James, (1993)
		7. Actual odor levels prediction: $N_{Thres} = N_0 * N_{TR} * N_X = \frac{C_{LF}}{C_0} * \frac{C_0}{C_x} * \frac{C_x}{C_T} = \frac{C_{LF}}{C_T}$	Zeiss, Chris and Atwater, James, (1993)
		8. Determination of odor frequencies: $OF_j = \sum_{j=1}^{x} g_{ij} * f_i * N_x$	Zeiss, Chris and Atwater, James, (1993)
2. Located in areas which soils have a higher clay content	-	Recommended	Manitoba Hazardous Waste Management Corp., (1988)
3. Health risk impacts	Maximum impact distance of 900 m from the site boundary.	Odor dilution at 100% to avoid any possible health risk impact	Zeiss, Chris and Atwater, James, (1993)
4. Location from a major road	0.2-10 km	Economic, transportation and management reasons	Baban, Serwan M.J.; Flannagan, Joseph, (1998)

II) SOCIAL AND COMMUNITY CRITERIA			
a) HEURISTIC COGNITIVE JUDGMENT			
1. Odor (Annoyance)	Minimum distance of 600 m.	Use of a suitability Scale from 1 to 10 Giving a greater value to those areas further away from the communities (only major communities were considered for this constraint)	Zeiss, Chris and Atwater, James, (1993). Rowe, Megan, (1998). Lober, Douglas J., (1995)
2. Community's need for the facility (i.e., recent loss of revenues or economic power)	Types of needs: 1. Economical 2. Cultural 3. Environmental 4. Social 5. Political	Use of a suitability Scale from 1 to 10 Giving a greater suitability value to those census enumeration areas that are perceived to have a grater need for the facility	Thaler, Richard, (1985). Thaler, Richard (1980)
3. Distance from the site due to community opposition	Minimum distance 8 km (about 40 % of opposition approx. Only major communities were considered for this constraint)	Opposition to siting the facility within a certain distance can be determine by the following equations: $\text{Log of opposition}_{\text{Landfill X miles}} = 0.22 + (-0.40 * \ln \text{ X miles}) = Y$ $\text{Percent of opposition}_{\text{landfill}} = \frac{1}{1+e^{-Y}} = \%$	Lober, Douglas J., (1995). Lober, Douglas J.; Green, Donald P., (1994)
b) DEMOGRAPHIC			
1. Age	Comparison of % of older population (more than 45 years of age) between communities of the study area	Use of a suitability Scale from 1 to 10 Giving a greater value to those census enumeration areas with a higher percentage of older population	Lober, Douglas J., (1995). Hunter, Susan; Leyden, Kevin M., (1995)
2. Family with children	-	Use of a suitability Scale from 1 to 10 Giving a smaller value to those census enumeration areas with a higher rate of children in the family	Lober, Douglas J., (1995). Hunter, Susan; Leyden, Kevin M., (1995)
c) ECONOMIC			
1. Gradual economic loss	An increase or decrease of unemployment rate during the period between the last two census (1991-1996)	Use of a suitability Scale from 1 to 10 Giving a greater value to those census enumeration areas with a smaller decrease of unemployment rate	Lake, Robert W., (1993)
2. Inadequate public services	-	Use of a suitability Scale from 1 to 10 Giving a greater value to those communities that have better public services	Lake, Robert W., (1993)

c) POLITICAL AND CULTURAL			
1. Community division or rift due to social conflicts	-	Use of a suitability Scale from 1 to 10 Giving a smaller value to those communities that are perceived to be divided	Hunter, Susan; Leyden, Kevin M., (1995)
2. History of environmental problems	-	Use of a suitability Scale from 1 to 10 Giving a greater suitability value to those census enumeration areas with no past of environmental problems	Stallings, Robert A., (1991)

NOTATION LIST

Aei = Noise attenuation factors
Cx = Concentration at receptor at distance x [mg m-3]
CLF = Concentration in landfill gas [mg m-3]
Co = Concentration of landfill surface [mg m-3]
CT = Odor threshold concentration [mg m-3]
f= Sound frequency [Hz]
fi = Frequency of climatic situation indexed by stability and wind speed
gij = Frequency of wind directions under climatic situation i towards receptor point j
L = Cross-wind width of source
Lb = Sound level at recognition boundary [dBA]
Ls. = Sound level at site boundary [dBA]
Nx = Dilution ratio measured at x[m] downwind [-]
NAct = No. NTV = Actual total dilution ratio
NO = Initial dilution ratio due to mixing at landfill surface
NR = Required dilution from dispersion to reach
NThres = Dilution factor required to reach odor threshold (= 10,000 x Young and Parker $N_{Thres} = \frac{N_{Thres}}{N_o}$
NTV= Dilution from surface dispersion
OFj Odor frequency at receptor point j
q = Linear emission rate $\left[\frac{g}{m-s}\right]$

Table 3.3 Final Airport Siting Criteria

I) ENVIRONMENTAL AND PHYSICAL CRITERIA

a) EXCLUSIONARY

CRITERIA, IMPACTS, AND OTHER ISSUES	DISTANCE/EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
1. Minimum distance from any landfill, garbage dump, and food waste site to an airport runway used by piston, turbo jet, or turbine engine aircraft	1250 m (or 4 km*, 8 km**)	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter, (1996). United States Environmental Protection Agency, (1993)*. Transport Canada, Aviation, (1989)**
2. Facilities should not be allowed in recreational, cultural, historic, archeological, aesthetic areas, key wild life habitat or high natural risk areas	Required	-	Baban, Serwan M.J.; Flannagan, Joseph., (1998). Manitoba Hazardous Waste Management Corp. (1998)
3 . No structures should be built exceeding the height of the weather radar antenna	Within a radius of 300 m	-	Transport Canada, Aviation, (1989)
4. VHF/UHF transmitters and receivers must be located out of areas of electrical noise generation	Transmitters and receivers located at least 1.6 km from noise source	-	Transport Canada, Aviation, (1989)
5. VHF/UHF transmitters and receivers must be located out of influenced areas with intermodulation problems (AM, FM and TV stations)	Minimum distance 8 km	-	Transport Canada, Aviation, (1989)
6. Restrictions to visibility by industrial operations or manufacturing processes	Minimum distance 5 miles or 8 km	-	Transport Canada, Aviation, (1989)

7. Air quality impacts	6 km (or 31 km for hydrocarbons)	Carbon monoxide (CO) average concentration over 1-hour period: 35 mg/m^3 or 35 ppm	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Carbon monoxide (CO) average concentration over 8-hour period: 15 mg/m^3 or 9 ppm	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Nitrogen dioxide (NO_2) average concentration over 1-hour period: 400 µg/m^3	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Nitrogen dioxide (NO_2) average concentration over 24-hour period: 200 µg/m^3	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Nitrogen dioxide annual arithmetic mean: 100 µg/m^3 or 0.05 ppm	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Ozone (O_3) average concentration over 1-hour period: 160 µg/m^3 or 0.12 ppm	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Ozone (O_3) average concentration over 24-hour period: 50 µg/m^3	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Ozone annual arithmetic mean: 30 µg/m^3	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Total suspended particles (TSP) average concentration over 24-hour period: 120 µg/m^3 or 150 ppm	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Total suspended particles annual geometric mean: 70 µg/m^3 or 50 ppm	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).

b) NON EXCLUSIONARY			
1. Noise	Located 15,000 m. away from a mejor urban area (distance of the take off/approach zone)	A modeled area of the 60 LAeq noise contour during day and night operations	Thomas, Callum, (1996). Ashford, N., Wright, P., (1979, 1992) .
		Noise below 87 PNdB produced by aircraft	Thomas, Callum, (1996). Ashford, N., Wright, P., (1979, 1992) .
II) SOCIAL AND COMMUNITY CRITERIA			
a) HEURISTIC COGNITIVE JUDGMENT			
2. Noise (annoyance)	Between 15 to 18 km	a) High Impact Zone: within the 8 km. circle b) Low Impact Zone : from 8 to 15 km c) No Impact Zone: more than 15 km	Thomas, Callum, (1996)
b) LOCATIONAL			
1. Traffic congestion	Out of densely populated areas (between 10 to 30 km) and accessibility to the airport	a) High Transit Impact: If located inside a densely populated area, or located far from open access road. b) Low Transit Impact: If located outside a densely populated area, or has an only and main access road.	Lake, Robert W., (1993). Lober, Douglas J., (1995)
c) ECONOMIC			
1. Gradual economic loss	An increase or decrease of unemployment rate during the period between the last two census (1991-1996)	Use of a suitability Scale from 1 to 10 Giving a greater value to those census enumeration areas with a smaller decrease of unemployment rate	Lake, Robert W., (1993)
2. Inadequate public services	-	Use of a suitability Scale from 1 to 10 Giving a greater value to those communities that have better public services	Lake, Robert W., (1993)
d) POLITICAL AND CULTURAL			
1. History of environmental problems	-	Use of a suitability Scale from 1 to 10 Giving a greater suitability value to those census enumeration areas with no past of environmental problems	Stallings, Robert A., (1991)

Buffer distances were obtained from several sources. A distance of 1250 m was obtained from Siddiqui et al. (1996). The U.S. Environmental Protection Agency (EPA, 1993) provides a minimum distance of 4 km and Transport Canada (1989), advices on having a minimum distance of 8 km between the new landfill site and an airport.

3) Minimum distance from a river, or a permanent body of water

This criterion consists in preventing any possible contamination of surface waters by, polluted run off, waste blown by the wind or by leachate that is seeping from the landfill site. A minimum distance of 0.8 km is given by Siddiqui et al (1996).

4) Minimum distance from a public water supply

A water supply can be either a surface or an underground water intake. A water supply can be used for human, cattle or agricultural purposes, therefore it is important to preserve and maintain free of contaminants all waters utilized for direct human consumption. A minimum distance of 1.6 km is required between the landfill site and any superficial or underground water intake (Siddiqui et al.).

5) Facilities should no be allowed in recreational, cultural, aesthetic areas, key wild life habitat or high natural risk areas (Land Use Classification)

It is a requirement to keep the landfill location out of any provincial or national park, and any areas of natural interest, or areas with an aesthetic value. Baban and Flannagan (1998), explain that the World Health Organization (WHO) has created a set of exclusionary criteria for landfill siting in which any site should not be located in areas with major natural hazards, historic sites or in sensitive locations.

In the U.S., in the state of California, (Manitoba Hazardous Waste Management Corp.), assembly bill 2948 provides the legal basis for the siting of county or regional hazardous facilities. This bill indicates that the location of landfill sites should not be allowed in recreational, cultural or aesthetic areas. Similarly, the state of Nevada in its waste management regulations maintain that facilities should not be constructed in areas designated as historical or archaeological sites, or within 1.6 km of key wildlife habitat for threatened or endangered species.

6) Minimum distance from a railway line

This criterion is a preventative measure, as described by Baban and Flannagan (1998), against possible land subsidence and visual intrusion. The minimum distance required between a landfill site and a railway line is 500 m.

7) Minimum distance from a historic or archeological site

The protection of areas and sites with archaeological or historical importance must be of primary interest in the location of a regional landfill. The inclusion of this constraint prevents the destruction or partial damage to any site considered of having any historical importance. Baban and Flannagan (1998), give a minimum buffering distance of 500 m from any site with historical or archaeological characteristics.

8) Agricultural land use

The necessity to preserve land with the highest agricultural value for crop growing purposes is a very important issue. A landfill site should be located in those areas considered to have the lowest value for agricultural activity in order to maintain the availability of crop growing lands. The CLI (Canadian land inventory) has 8 different classes of agricultural land.

Class 1: Soils have not significant limitations in the use for crops.

Class 2: Soils in this class have moderate limitations

Class 3: Soils in this class have moderately severe limitations which restrict the range of crops.

Class 4: Soils in this class have severe limitations which restrict the range of crops.

Class 5: In this class, soils have very severe limitations that restrict their capability to producing perennial forage crops, and improvement practices are feasible.

Class 6: Soils in this class are capable only of producing perennial forage crops, and improvement practices are not feasible.

Class 7: Soils in this class have no capability for arable culture or permanent pasture.

Class 0: Organic Soils (not placed in capability classes).

Baban and Flannagan (1998), recommends not taking the higher values of the agricultural land classification, therefore the classes used from the CLI in this study are 3, 4, 5, 6, and 7.

9) Minimum distance from a Geological fault

Geological complex areas may be unsuitable for developing a landfill site due to unstable or high risk of failure characteristics. The Manitoba Hazardous Waste Management Corporation recommends a minimum distance of 61 m from any geological fault.

10) Air Quality Impacts

Air quality impacts are directly related to landfill gas emissions which may contain concentrations of VOC's (volatile organic compounds), including major pollutants such as methylene choride, benzene, methane, vinyl choride, etc

As described by Zeiss and Atwater (1993), gas production rates can be affected by the type of waste, waste density, water content, depth and age of the site, among others. Accordingly, the type of cover material, thickness of the cover material layer, water content, and compaction can affect the gas emission rate.

A distance of 500 m is provided by Zeiss and Atwater (1993) as the maximum distance where air quality impacts have been observed, therefore a minimum distance of 500 m from the landfill site was used in this research for the present criterion.

Only major communities considered in the analysis of this constraint (refer to Figure C-1.2, Appendix C, Section C-1).

11) Odor (Non-exclusionary)

Odor is a nuisance impact and one of the primary concerns when considering to find a suitable site for a regional landfill. Odorous emissions can be produced by the biodegradation of the waste already disposed in the site or by the operations in the active face of the landfill. Zeiss and Atwater (1993), explain that in several studies that the odor character of landfill odors were identified as (a) a sweet and musty smell of open garbage at the working face, (b) a heavy fecal smell near leachate collection systems, and (c) a sour sulfuric odor. The odor impact zone can be a distance of up to 500 to 600 m downwind of the site. Only the largest communities in the County of Lethbridge were considered for this criterion (Figure C-1.2, Appendix C, Section C-1).

12) Located in areas which soils have a higher clay content

In order to protect any possible contamination of groundwater or surface water, it is necessary to select the areas with the highest clay content. Technical literature (Manitoba, Hazardous Waste Corp., 1988), based on U.S. regulations, recommends a minimum soil thickness of 10 m, and a hydraulic conductivity of 1×10^{-5} m/sec. Clays are the most adequate type of soils that can give us the hydraulic conductivity required for the selection of a landfill site.

13) Health risk impacts

Health concerns arise by the emission of contaminants from the waste disposal site. Health risks can be due to landfill gas emissions or by airborne volatile pollutants. Zeiss and Atwater (1993), explain that a correlation was found between odors and health risks from VOCs in the landfill gas, therefore odors are not a merely nuisance, but can also serve as an indicator for health risks. As has been observed, the distance recommended to prevent any health risks impacts is 900 m. Health risk impacts were only considered for those communities depicted in Figure C-1.2, Appendix C, Section C-1.

14) Location from a major road

This constraint accounts for a better accessibility and the minimization of development, transportation and infrastructure costs; a landfill site should be located as close as possible to the main road. Nevertheless, it must also be located at a safe distance from a road to prevent blowing material drifting onto the road and to reduce visual impacts. The distances recommended to locate a landfill from a major road are between 0.2 and 10 km.

15) Odor (Heuristic Cognitive Judgment)

This constraint tries to take into consideration how people perceive odor as a nuisance. While some individuals may perceive noxious odors as being unpleasant from an attitudinal perspective, in some other individuals even the slightest smell may trigger behavioral responses. It has been observed that the maximum distance where odor impacts occurred is 600 m. For the purposes of this research, a linear distance from the site to 600 m outside of the landfill a suitability value of zero is given, from a distance of 600 m to 1200 m a value of one was given and so forth. The Table 3.4 gives a better explanation of the scale used to evaluate the present criterion. Only some of communities in the County of Lethbridge were considered for this criterion (FigureC-1.2, Appendix C, Section C-1).

Table 3.4 Suitability Values for Odor as a Heuristic Cognitive Judgment

DISTANCE (m)	SUITABILITY VALUE
0 to 600	1
600 to 1200	2
1200 to 1800	3
1800 to 2400	4
2400 to 3000	5
3000 to 3600	6
3600 to 4200	7
4200 to 4800	8
4800 to 5400	9
More than 5400	10

16) Community's need for the facility

Community's need for the facility can be one of the decisive factors in siting a landfill. If the residents of a certain community perceive that they have suffered a sudden loss, or deterioration of economic revenues, cultural values, environmental quality, standard of living, or political influence, possibly, for these individuals, hosting a solid waste disposal facility could bring relief for the different needs that they could have. A potential host community could be interested in having a facility nearby, but the possibilities of locating a landfill increases if the facility mitigates some of their most imperative necessities. Some of the positive impacts of hosting a facility in the proximity can be more employment opportunities, higher revenues, more infrastructure, social development, and environmental protection.

17) Distance from the site due to community opposition

Community opposition is at the present time one of the major factors contributing to the ever increasing number of unsuccessful waste disposal facilities' attempts. Attitudinal and behavioral community opposition can be due to several reasons, among the most important are, health impacts, environmental impacts, perception of residents not being taken into account in the siting process, fairness, decrease in quality of life, and nuisance impacts.

Lober and Green (1994) developed a causal model of opposition to siting several solid waste disposal facilities, an ash landfill, a recycling center, a waste-to-energy plant, and a transfer station, using as independent variables the distance between the facility and the residences of the public surveyed, and perception of need for the facility. In addition, the dependent variable employed was attitudes toward siting waste disposal facilities. The use of this model can serve to predict public opinion, measure the influence of need and distance variables on siting attitudes, and to compare the attitudes toward different types of facilities. Results from this study reinforce the broadly accepted idea that the people living near a planned facility will have to bear a large amount of costs and in return will receive few benefits, this situation is supported by motivations of self interests. In addition, the study shows that besides the distance variable, equity concerns and perception of need can also influence attitudes toward siting facilities. In fact the authors mention that policies considering need perceptions in facility siting may have greater acceptance than those addressing perceptions of losses and benefits through compensation and mitigation.

The model of opposition created by Lober and Green (1994), which is based on public attitudes motivated by self-interest, tries to calculate the inverse relationship between distance and opposition to facility siting.

This model uses the following equations to quantify the level of opposition towards siting a waste facility:

$$\text{log odds of opposition}_{\text{type of facility, x miles}} = \text{Intercept} + (\text{Distance parameter} \; * \; \ln \text{x miles}) \quad (1)$$

$$\text{Percent opposition}_{\text{type of facility, x miles}} = \frac{1}{1 + e^{\text{log odds of opposition}}} \quad (2)$$

The parameters for the four different facilities are given in Table 3.5

Table 3.5 Parameter Estimates for Logit Model of Opposition

Type of Facility	**Intercept (Standard Error)**	**Distance Parameter (Standard Error)**
Waste to Energy	0.86 (0.23)	-0.44 (0.08)
Recycling Center	-1.49 (0.29)	-0.54 (0.15)
Transfer Station	-0.23 (0.21)	-0.35 (0.08)
Ash Landfill	0.22 (0.22)	-0.40 (0.07)

Source: Modified from Lober and Green, 1994

Making use of Lober and Green's approach, a distance 8 km was found to have 40% opposition for an ash landfill. Taking into consideration that an ash landfill has some similarities to a regional landfill, the 8 km distance was taken in the present research as the minimum distance to avoid any opposition above the 40% of the population. To this distance of 8 km, a suitability value of zero was given. Only the communities depicted in Figure C-1.2, Appendix C, Section C-1, were considered for this criterion.

18) Age

Several studies (Hunter and Leyden, 1995, and Lober, 1995), describe the use of age as a demographic predictor for public opposition towards siting a LULU closer to their community. These studies explain that older people (45 years and older) tend to be more compliant with hosting a deleterious facility nearby to their place of residency, for this reason, those communities with a greater population of older people can be more willing to host a regional landfill in the vicinity than those communities having a higher number of young residents. For the purposes of this study, those areas (census enumeration areas), having a higher percentage of older people within their limits will be given a higher suitability value.

19) Family with children

This factor is based on the idea that those communities with a higher number of households with children will be more reluctant to host a LULU nearby than those communities with a smaller number of families with children. As explained by Lober (1995), several facility siting studies take into consideration children living at home in order to demonstrate that this particular factor is an important variable and should be considered in siting attempts. In the present investigation, the criterion of children in the family is measured by the average number of never married sons or daughters at home per family census, giving a higher suitability value to those census enumeration areas with a smaller number of average never married sons or daughters in the family.

20) Gradual economic loss

Gradual economic loss refers to a steady diminishing of economic profits for a specific period of time within the potential community or the area that will be hosting the facility. Communities with greater economic needs or with pressure to increase their economic revenues would be more supportive to host a regional landfill nearby.

In the case of the present study, the difference between the unemployment rate from the 1991 and 1996 census was determined for the County of Lethbridge census enumeration areas. A greater suitability value from the scale of 1 to 10 was given to those enumeration areas with a higher decrease in their unemployment rate. From this factor, it can be assume that those regions with a greater unemployment rate decline will be more enthusiastic to host a facility to alleviate their current economic downward.

21) Inadequate public services

Construction of a regional landfill could impose an extra burden to the public services of the community that will be hosting the facility, for that reason, those regions with inadequate or insufficient public services should not be considered as the most viable sites to locate a landfill. Some of the services that are required for a regional landfill are roads, transportation, electricity, water, and wastewater treatment facilities. Lake (1993) explained that the idea of inadequate public services was based on the concept that most land development processes lack a comprehensive and suitable land use pattern in order to prevent overstraining the infrastructure of the communities.

A visual inspection of the main human settlements in the County of Lethbridge was conducted to establish how feasible would be to locate the regional landfill in the census enumeration areas closer to the communities in the county. A greater suitability value was given to the enumeration areas that were closer to those communities considered to have adequate public resources to host the facility under study.

22) Community division or rift due to social conflicts

Hunter and Leyden (1995), suggest that longstanding community divisions or local politics may influence the individuals' perspectives and behaviors toward the siting of LULUs. Locating a regional landfill nearby a community where previous conflicts or disagreements have polarized its residents into rival factions should be seriously considered not only to prevent the siting process from being delayed, but also from being cancel. From the results of a survey conducted in several communities of the area under study the possibility of having a rift within the community was established. In the analysis, a greater suitability value was given to those census enumeration areas where it was considered that the possibility of having a division or rift was smaller.

23) History of environmental problems

History of previous environmental accidents or problems may be a catalyst for community individuals to adopt an oppositional behavior to the siting of LULUs nearby their place of residency. Past problems related to environmental issues, and event media coverage from remote problematic sites can generate a biased image, and negatively impact public perception towards well engineered and designed waste disposal locations.

For this factor the number of livestock operations in each one of the census enumeration areas was used. A higher suitability value was given to those areas having smaller number of livestock operations.

Airport Criteria

1) Minimum distance from any landfill, garbage dump, and food waste site to an airport runway used by piston, turbo jet, or turbine engine aircraft

Airports are naturally attractive areas to many species of birds because the wide open, short grass areas provide the basic elements of security from predators and humans, a place to nest and be idle, and access to food and water sources (Transport Canada, 1989).

The present criterion is directly related to the landfill siting constraint that takes into consideration the minimum distance to any airport runway used by piston, turbojet, or turbine aircraft. In siting a new regional landfill the location of all active landfills should be contemplated to avoid risks of collision between aircraft and birds. A buffer distance of 1250 m is given by Siddiqui et al. (1996); a distance of 4 km is provided by the U.S. EPA (1993), and Transport Canada (1989), recommends a minimum distance of 4 km.

2) Facilities should not be allowed in recreational, cultural, historic, archeological, aesthetic areas, key wild life habitat or high natural risk areas

An airport should not be located in areas regarded as having a high cultural, historical, aesthetical, or wildlife habitat value. Regional airports should be also sited out of national or provincial parks in order to minimize the intrusion of external elements in the region and prevent the destruction of the natural environment of the site. High natural risk areas could place a danger to the structural stability of an airport and to the safety of the people using the facility therefore these areas should also be avoided.

3) No structures should be built exceeding the height of the weather radar antenna

Transport Canada (1989), provides the normativity for building structures nearby radar systems, considering that the size and construction materials of buildings and other structures in the vicinity must be controlled to ensure that the radar coverage volume is not reduced and that the number of false targets detected is not increased.

For weather radars a minimum distance of 300 m is given as the buffer distance to prevent inaccurate readings. Only the communities depicted in Figure C-1.2, Appendix C, Section C-1, were considered for this criterion.

4) VHF/UHF transmitters and receivers must be located out of areas of electrical noise generation

Radio communication systems can experience interference noise by a great array of sources. Engine ignitions, electric motors, electrical switching gear, high-tension line leakage, diathermic and industrial heating generators, and many household appliances may be the cause of electrical noise. Transport Canada (1989), recommends a minimum distance of 1.6 km between the noise generators and the radio antenna. For this constraint only the communities shown in Figure C-1.2, Appendix C, Section C-1, were considered.

5) VHF/UHF transmitters and receivers must be located out of influenced areas with intermodulation problems (AM, FM and TV stations)

Transport Canada (1989), explains that intermodulation problems may be caused by high powered AM, FM, and TV stations and that these difficulties can be prevented by locating such facilities at least 8 km from the transmitters and receivers. Only major communities were considered for this constraint (refer to Figure C-1.2, Appendix C, Section C-1).

6) Restrictions to visibility by industrial operations or manufacturing processes

This constraint refers to factors, other than deteriorating weather conditions, that restrict visibility at an airport and limit aircraft operations. Some industrial or manufacturing processes generate smoke, dust or steam in ample volumes to constitute a restriction to visibility under certain wind conditions and temperature inversion. The types of industries that may contribute to visibility deterioration are pulp mills, steel mills, quarries, municipal or other incinerators, cement plants, sawmills, and refineries.

There is sufficient evidence from airports across Canada to suggest that those industries that can generate visibility restrictions should be located at least 8 km away from the easterly boundary of an airport (Transport Canada, 1989).

Applying the previous considerations, a regional airport should not be located within a distance of 8 km from any industry regarded as a generator of visibility restrictions. As in previous criteria, the communities considered for this constraint are illustrated in Figure C-1.2, Appendix C, Section C-1.

7) Air quality impacts

Areas around and on site airport projects could have major potential air quality impacts. Carbon monoxide (CO), nitrogen oxides (NO_x), total suspended particle matter (TSP), hydrocarbons (total and not methane hydrocarbons THC, NMHC), ozone (O_3), sulphur dioxide (SO_2), and volatile organic compounds (VOC), are the major pollutants of concern in the vicinity of an airport.

Some technical reports (U.S. Department of Transportation, 1980, Vol. I and II), present the results of the impact of aircraft emissions at populated locations in the vicinity of airports. These reports provide the results of the monitoring and modeling efforts at Washington National (DCA), Los Angeles International (LAX), Dulles International (IDA) Lakeland Florida, John F. Kennedy (JFK), and Chicago O'Hare airports. The maximum distance observed, for air quality impacts in the airports previously mentioned, was 31 km for hydrocarbons and 6 km for all the other pollutants considered in the study.

For purposes of the present investigation a minimum buffer distance of 6 km from any major community was considered to avoid the intrusion of pollutants generated by airport operations (refer to Figure C-1.2, Appendix C, Section C-2).

8) Noise

The increasing interest on airport noise as a serious environmental problem has resulted from the intensification of air traffic activities, specifically, flights with larger and more powerful jet aircraft, increased urbanization of airport neighborhoods, and increased public awareness of environmental problems.

Aircraft noise diminishes the opportunity of enjoying the amenities of a pleasant living environment and may cause land values to decrease. It can be a source of great annoyance, disrupt sleep, interfering with conversation, and depriving people from full enjoyment of many recreational activities (Ashford and Wright, 1979, 1992).

Aircraft noise, as an environmental non-exclusionary criterion, is the most significant noise problem in the vicinity of an airport. In general, jet aircraft are without a doubt the major cause of aircraft noise complaints.

Combustion, fan noise, and jet noise are the main sources of noise from jet aircraft. Fan noise is related to the equipment and aerodynamics of the intake portion of the jet engine. Combustion noise is generated by the combustion process in the engine due to the high-velocity flow of high-temperature gases in the engine. Jet exhaust noise is created by the high-velocity exhaust gases leaving the jet engine. In order to calculate the exposure to noise generated by aircraft in the vicinity of an airport four factors have to be considered, these factors are Aircraft noise levels, number of landings, take offs, and engines employed, time of day, and extent of runway utilization (Ashford and Wright, 1979, 1992).

In predicting noise annoyance, the Noise Exposure Forecast (NEF) system can provide accurate measurements. The NEF system takes into consideration the addition of noise from all aircraft types operating at an airport based on aircraft movements by runways and the time of day that the events occur. Due to the large number of calculations necessary for the construction of NEF contours it requires the use of computer modeling for the practical application of the system. The NEF system is basically used to encourage compatible land use planning in the proximity of an airport. Traffic volume, aircraft type and mix are used in calculating NEF contours to forecast for a noise impact for a period between five to ten years into the future (Transport Canada, 1989).

Several studies and technical reports (Callum, 1996, Ashford and Wright, 1979, 1992, Transport Canada, 1989), recommend a minimum buffering distance of 15 km between an airport and the closest community. For this criterion, only the communities shown in Figure C-1.2, Appendix C, Section C-1, were considered.

9) Noise (as annoyance)

Noise, as a social factor, tries to take into account the way in which individuals perceive the annoyance produced by aircraft operations in the vicinity of an airport. For some people aircraft noise may not produce the same amount of discomfort as for some other individuals that could even take behavioral actions to demonstrate their irritation.

In an airport siting effort, an accurate assessment of the annoyance resulting from exposure to aircraft noise is essential to minimize the possibility of negative impacts in the neighboring areas. The overall subjective reaction to noise is dependent on the number of times the disturbance occurs as well as the daily distribution of the events.

As some authors recommend (Thomas, 1996, Transport Canada, 1989), a minimum distance between 15 and 18 km should be considered to prevent any noise impacts between the airport site and any major community. Only the communities depicted in Figure C-1.2, Appendix C, Section C-1, were considered for this criterion.

10) Traffic congestion

A regional airport should be located out of densely populated areas as a measure to prevent and reduce traffic impacts. An airport also needs to be located near a major road in order to make more flexible and fluid the transportation of people and goods towards the facility.

Transport Canada (1989), suggest locating an airport between 10 to 30 km from a densely populated area, and as close as possible to any major road.

For purposes of this investigation, a higher suitability value was given to the areas in between 10 to 30 km from any major community, and a higher suitability value was given to those areas closer to a primary road. Figure C1.2. Appendix C, Section C-1, illustrate those communities considered in the analysis of this criterion.

11) Gradual economic loss

As previously described in the landfill siting criteria, the 'gradual economic loss' factor refers to a steady economic downward of a community or a group of communities, in which locating an airport nearby could bring relieve to their perceived economic hardships.

For this criterion, the same methodology was used for siting an airport as it was for siting a landfill. The difference between the unemployment rate between the 1991 and 1996 census was determined for the census enumeration areas of the region under study, then, a greater value from the suitability scale was given to those enumeration areas with a higher increase in their unemployment rate.

12) Inadequate public services

Residents in a region could perceive that the already deficient public services in their community would be overstretched even more if a regional airport is located in the vicinity of their residency, thus, assuming an oppositional attitude or behavior towards the facility.

As it was described earlier in the landfill siting criteria, a visual inspection of the major communities in the area under scrutiny was used to determine the feasibility of locating a LULU nearby. Using the census enumeration areas information, a greater suitability value was given to those areas that are closer to communities considered to have superior public services to host an airport.

13) History of environmental problems

In trying to find the best location for any LULU, history of social turmoil due to previous environmental issues, may be a predictor of behavioral opposition towards the siting effort by the residents of the communities in the vicinity of the proposed site.

As earlier described in the landfill criteria, the suitability values that were assigned to the enumeration areas come from the number of livestock operations. A smaller suitability value was given to those areas with a larger number of livestock operations.

4.0.0 GIS Research Analysis

After determining the significant criteria to be employed in the location allocation analysis, the subsequent action would be to load the computer based mapping databases into a GIS program. ARCView version 3.2a was the computer software utilized for the complete suitability siting procedure, with the spatial analyst[6] and the projection utility[7] extensions loaded.

The initial computer information (digital mapping) illustrates several physical, geographical and social characteristics from the County of Lethbridge. The original databases were the basis in creating the intermediate and final maps of the GIS analysis, and in extracting the results and conclusions of the investigation. The initial maps can be observed from Figure C-1.1 to Figure C-1.15 in Appendix C, Section C-1.

As the computer databases containing thematic mapping information were originated from several sources, it was necessary to normalize all the maps with the same mapping characteristics (coordinate system[8], map projection[9], scale, map and distance units and resolution).

The map projection that better fitted the necessities of the research was UTM NAD 83 (Universal Transverse Mercator[10], North American Datum[11] 1983) zone 12. Therefore all the maps used, and created were generated utilizing the former type of projection.

During the GIS analysis the vector based maps were converted into a raster format using a map resolution of 50 m by 50 m for each cell.

Once obtained the normalized and rectified set of maps, it was necessary to select the proper GIS analysis methodology in order to enhance the reliability of the results for this study.

4.1.0 Multi-Criteria, Location GIS Methodologies

There are several GIS methodologies that can be used for suitability mapping evaluations and resources allocation decisions. The Multi-criteria evaluation (MCE) technique is a one of the most utilized procedures for assessing and aggregating many criteria to support decision-making in facility siting undertakings (IDRISI, 1999).

The methodologies available to perform MCE analyses are the Boolean approach, the Weighted Linear Combination (WLC) methodology, the Ordered Weighted Average (OWA) methodology, and the application of the three methods, which is called the Boolean and Continuous Suitability Results.

The first methodology, the Boolean approach, consists of standardizing with values of 0 and 1 all the criteria taken into consideration for the analysis, and the overlaying of the layers depicting the criteria (aggregation procedure) is accomplished by using a Boolean intersection method (multiplication of criteria).

The Boolean approach can employ as aggregation methods the ‘and’ logic connector, or the ’or’ logic connector. The ‘and’ procedure is the most conservative approach in terms of risk because it requires that all the criteria considered be 1 in order to have a suitable siting location. In the other hand, the use of the ‘or’ procedure is too risky since it only requires a value of 1 in any of the constraints or factors to have a suitable siting area. The main disadvantage of using the Boolean approach is that it reduces all the criteria into a scale of 0 and 1; without allowing any trade offs between the constraints and factors involved (IDRISI, 1999).

The WLC methodology consists of normalizing the factors into a continuous scale of suitability, with the minimum number of the scale being the least suitable and the maximum number of the scale being the most suitable (IDRISI, 1999). Rescaling the factors into a standard continuous scale allows the combination and comparison among the factors. WLC approaches often make use of fuzzy concepts in order to give locations a value or degree of suitability.

In the WLC procedure, relative weights are given to each one of the factors involved in the aggregation analysis. These factor weights, or also called tradeoff weights, not only indicate the relative importance of one given factor over the others, but also influence the balance and tradeoff that exist between the factors considered. The relative weights assigned to the factors can be obtained by means of a simple pairwise comparison analysis (IDRISI, 1999).

The WLC allows the retention of variability from continuous factors, and provides the ability to have trade offs between the criteria involved.

In the OWA methodology, the weighted factors from the WLC procedure are reevaluated applying a new set of weights. This new set of weights gives the opportunity to control the overall level of trade off between the factors, and to measure the intensity of risk in the suitability determination (IDRISI, 1999).

The order weights determined in the OWA technique have control over tradeoff and risk through the different rank order position of the factors at every location. This is attained by ranking the WLC factors from the lowest suitability value to the highest, and after that, a weight should be given to the different ranks obtained.

The site selection using the 'Boolean and Continuous Results' approach consists in providing a suitability threshold to the results of the Boolean, WLC, and OWA methodologies. In this approach the level of suitability is obtained by specifying an arbitrary threshold in the suitability scale, and as a result of this procedure, the locations will be identified as suitable or not suitable (IDRISI, 1999).

The approach taken in the case of the present research was the use of a Boolean and Continuous Results methodology. In the first phase of the GIS analysis a Boolean methodology was applied only for the constraints of the environmental exclusionary criteria. The second phase considered the use of a WLC methodology for the environmental non-exclusionary factors and for the social criteria. And finally, in the third phase of the digital analysis, a threshold was incorporated in the suitability scale utilized. Figure 4.1 illustrates the steps taken to obtain the intermediate and final maps. It is important to mention that quality control measures were constant throughout the GIS analysis.

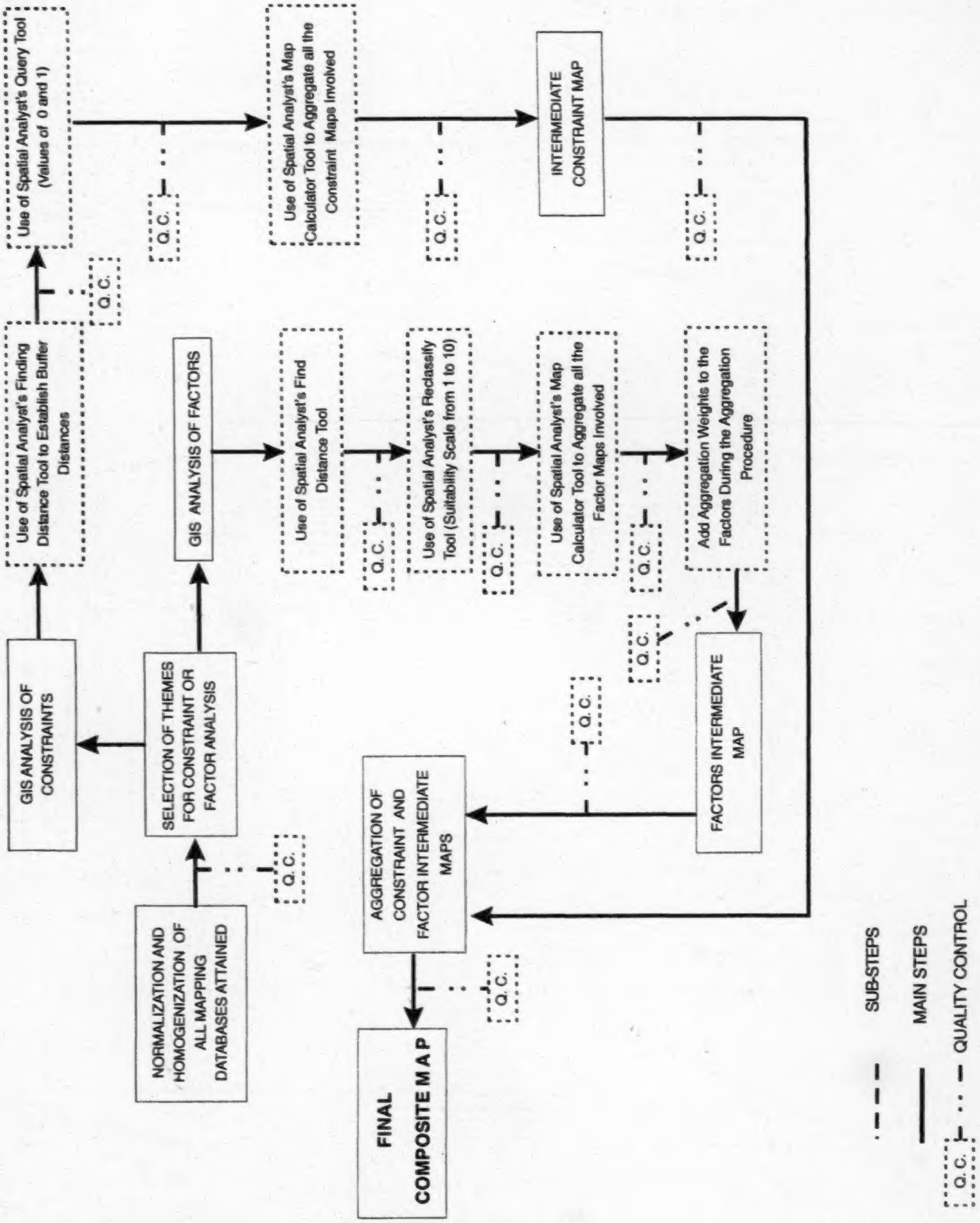

NORMALIZATION AND HOMOGENIZATION OF ALL MAPPING DATABASES ATTAINED
Q.C.
SELECTION OF THEMES FOR CONSTRAINT OR FACTOR ANALYSIS
GIS ANALYSIS OF CONSTRAINTS
Use of Spatial Analyst's Finding Distance Tool to Establish Buffer Distances
Q.C.
Use of Spatial Analyst's Query Tool (Values of 0 and 1)
Q.C.
Use of Spatial Analyst's Map Calculator Tool to Aggregate all the Constraint Maps Involved
Q.C.
INTERMEDIATE CONSTRAINT MAP
Q.C.
GIS ANALYSIS OF FACTORS
Use of Spatial Analyst's Find Distance Tool
Q.C.
Use of Spatial Analyst's Reclassify Tool (Suitability Scale from 1 to 10)
Q.C.
Use of Spatial Analyst's Map Calculator Tool to Aggregate all the Factor Maps Involved
Q.C.
Add Aggregation Weights to the Factors During the Aggregation Procedure
Q.C.
FACTORS INTERMEDIATE MAP
Q.C.
AGGREGATION OF CONSTRAINT AND FACTOR INTERMEDIATE MAPS
Q.C.
FINAL COMPOSITE MAP
SUB-STEPS
MAIN STEPS
Q.C.
QUALITY CONTROL

Fig. 4.1 Flow Diagram of the GIS Analysis

4.2.0 GIS Analysis Using ArcView

As previously mentioned, ArcView was the primary tool employed during the different stages of the GIS Analysis. The study is based on the idea of performing a multi-criteria evaluation by means of a Boolean and Continuous Results methodology for the two types of facilities selected, a regional airport, and a regional landfill.

4.2.1 Criteria Consisting of Constraints

For the exclusionary environmental and physical criteria, which consist only of dichotomous constraints, a Boolean approach was implemented with two types of suitability values, 0 for unsuitable zones and 1 for suitable areas.

The first step of the GIS methodology consisted of choosing all the initial layers that needed to be used in the Boolean analysis. In the case of the regional landfill, the following initial maps were needed, 'location of cities, town and villages', 'location of airports', 'hydrology', 'location of water wells', 'land use classification', 'location of railways', 'location of archaeological sites', 'agricultural land use classification', and 'location of geographical faults' (Figures C-1.2, C-1.4, C-1.5, C-1.6, C-1.7, C-1.8, C-1.9, C-1.11, C-1.13, in Appendix C, Section C-1). In the case of the regional airport, 'location of the actual landfill', 'land use classification', and 'location of cities, towns and villages' (Figures C-14, C-1.7, and C-1.2, in Appendix C, Section C-1) were the initial maps required.

The next step consisted of assigning to the initial maps selected the mandatory buffer distances (refer to Tables 3.2 and 3.3 for buffer distances) that corresponded to the criteria under analysis, this procedure was accomplished by making use of the 'Find Distance' command that is part of the 'Spatial Analyst extension'. At the same time that buffer distances were given, the maps (or also called themes) were converted from vector to grid format, giving to the cells a resolution value of 50 m by 50 m. Figures in Appendix C, Section C-2 illustrate the acceptable and unacceptable areas for each one of the constraints in the airport and the regional landfill analysis.

It was determined to consider a cell resolution value of 50 m by 50 m during the GIS analysis because it is relatively faster for the software to process the information with this value than with any other smaller resolution number. In addition, a 50 m by 50 m value is a more suitable resolution number considering the characteristics of the facilities under scrutiny, the mapping features, and the scope of the siting analysis.

Once having the buffer distances in the new set of grid based maps, the command 'Map Query' (also part of the 'Spatial Analyst' extension), was employed in each of the new themes to give suitability values of 0 and 1. The value of 0 was given to those areas not suitable for facility siting, and a value of 1 was given to the regions suitable for hosting a facility in accordance with the buffer distances employed.

In the particular situation that the theme used to represent a specific constraint consisted of polygon information, instead of lines or points (i.e. agricultural land use classification or general land use classification), the values of 0 and 1 were added into a column in the attribute table of the theme. This operation was performed in order to give a suitability value to the restricted and unrestricted areas (a value of 0, and a value of 1 respectively). After performing the previous procedure to the initial polygon maps, they were converted into grid format using the 'Convert to Grid' tool, which belongs to the 'Theme' menu in ArcView. The aforementioned approach was employed for the 'Land Use Classification', and the 'Agricultural Land Use Classification' themes. As an example, In the case of the 'Land Use Classification' theme for the first scenario, the features 'Cropland', 'Unimproved Pasture or Range Land', 'Unimproved Pasture or Forage Crops', and 'Non Productive Woodland', received a value of 1, all the other polygons received a value of zero. In the case of the 'Agricultural Land Use Classification' theme, also for the first scenario, the polygons illustrating agricultural land classes 1, 2 and 8 (water) received a value of 0; all the other classes received a value of 1.

When all the grid maps representing buffer zones were generated, they were overlaid to produce and intermediate composite map containing all the suitable and unsuitable areas. The grid themes were aggregated using the 'Map Calculator' tool from the 'Spatial Analyst' extension. The aggregation factor in this step was a multiplication.

In the case of the landfill constraints 'Minimum Distance from Any Occupied Residence or Collection of 10 or more Houses' and 'Air quality Impacts' the layer utilized in the analysis was 'Location of Cities, Towns, and Villages' (Figure C-1.2 in Appendix C, Section C-1).

For the regional Airport, five of the constraints ('No Structures Should Be Built Exceeding the Height of the Weather Radar Antenna', 'VHF/UHF Transmitters and Receivers Must Be Located Out of Areas of Electric Noise Generation', 'VHF/UHF Transmitters and Receivers Must Be Located Out of Influenced Areas with Intermodulation Problems: AM, FM, and TV Stations', 'Restrictions to Visibility by Industrial Operations and Manufacturing Processes', and 'Air Quality Impacts') also employed as initial layer 'Location of Cities, Towns and Villages' to carry out the GIS analysis.

The landfill constraint criterion 'Minimum Distance from Any Occupied Residence or Collection of 10 or More Houses', with a required distance of 0.45 km, is redundant when the constraint 'Air Quality Impacts' requiring a distance of 0.50 km is introduced in the analysis.

In the case of the airport siting effort, the constraints 'No Structure Should be Built Exceeding the Height of the Weather Radar Antenna' (minimum distance of 300 m), 'VHF/UHF Transmitters and Receivers Must Be Located Out of Areas with Electrical Noise Generation' (a minimum distance of 1.6 km), 'Air Quality Impacts' (minimum distance of 6 km), and 'Restrictions to visibility by industrial operations or manufacturing Processes' (minimum distance of 8 km), could be considered to be redundant for the GIS analysis when the constraint 'VHF/UHF Transmitters and Receivers Must Be Located Out of Influenced Areas with Intermodulation Problems' is introduced in the study with a minimum distance required of 8 km.

Despite the redundancy of some of the physical criteria selected, all the redundant constraints were considered into the GIS analysis to emphasize their significance in the facility siting exercise.

4.2.2 Criteria Consisting of Suitability Factors

For the non-exclusionary environmental and physical criteria, as well as for all the social and community criteria, a WLC approach was implemented. As the criteria in this analysis are formed only by continuous factors, a suitability scale from 1 to 10 was utilized to give values to the different regions that could host the facility. The value of 1 is given to the most disadvantageous areas, and a value of 10 is given to those areas considered the most advantageous.

The first step of the process consisted of finding the distances of the map features in the initial themes required for the analysis. This was done by means of the 'Find Distance Tool'.

Once the grid themes with the distances from the features were obtained, a suitability value is given from the suitability scale. The suitability value must be a number from 1 to 10, depending on the proximity or the importance that each area has with respect of the relevant map features. The process of giving suitability values to the areas was generated making use of the 'Reclassify' command that also belongs to the 'Spatial Analyst' extension.

The suitability scale employed in the GIS analysis describes the magnitude of importance that the regions in the area under study could have considering a particular factor. For example, in the case of the factor 'Distance from the Site Due to Community Opposition', the areas closer to the communities have smaller values than those areas further away from the populated areas. As it was previously mentioned, the suitability scale created consists of values from 1 to 10, 1 being the smallest value and 10 the highest. Table 4.1 depicts the suitability scale used in the analysis together with its description. Each one of the suitability factors, together with its suitability regions, is showed in Appendix C, Section C-2.

Several advantages can be mentioned about using a suitability scale with values ranging from 1 to 10. It is a scale very simple to use and implement, there is a well-delimited difference between each one of the values in the scale, and the bounds of the scale comprise a region with great capabilities for differentiating between the various intensities of the factors in the region.

Several procedures were used to assign the suitability values of the WLC suitability scale to the different suitability factors of the landfill and airport analyses.

In the case of the suitability Criterion 'Content of Clay in Soil' those regions with a greater percent of clay content are given a greater suitability value. For this factor, the idea was to have a greater number of areas with a higher suitability value considering that the highest percentage of clay content for the soil in the county of Lethbridge is 56%. The upper half of the suitability scale has a range from 18% (value of 5) to 56% (value of 10) of soils with clay content to open a greater possibility of facility siting considering that the quality of the soil can be improved once the final location has been determined.

Table 4.1 WLC Suitability Scale

VALUE	DESCRIPTION
1	Not Suitable
2	Very Small Suitability
3	Small Suitability
4	Small to average Suitability
5	Average Suitability
6	Average to Good Suitability
7	Good Suitability
8	Very Good Suitability
9	Excellent Suitability
10	Perfect Suitability

For the factors 'Odor' and 'Odor as a Nuisance', a linear increase in suitability intensity is applied. This linear growth considers the location of the communities, and a buffer area of 0.60 km around them, as having the lowest suitability value, then, an increase by one level of the suitability scale is given to every 0.60 km increase in distance. The same principle of linear increase applies for the criterion 'Health Risk Impacts' the only difference is that the increase in suitability value is given by an increase of 0.90 km of distance.

In the case of the suitability factor 'Location from a Major Road' the decision of giving the lowest suitability value to a distance from 0.00 km to 0.20 km, and to distances greater than 20 km is derived from the concept that a regional landfill should be located within a distance of 0.20 km and 10 km in order to avoid blowing garbage and visual impacts, and to have easy access to the facility. Accordingly, a suitability value of 10 was given to the areas within the distance of 0.20 km and 10 km. A suitability value of 5 was given to the areas with a distance between 10 km and 20 km from any major road considering that these areas can also be of importance for landfill siting.

For the Factor 'Distance from the Site Due to Public Opposition', a decrease of 6% in public opposition represents an increase of one level in the suitability scale. As public opposition diminishes in intensity further away from the communities of the study area, the suitability value increases. The changes in values of public opposition by 6% was selected due to the necessity of having 10 different ranges with the same intervals for each one of the 10 levels of the suitability scale, and by these means be able to visualize how public opposition has a non linear relationship with distance. The percentage of opposition was measured making use of equations 1 and 2 described in Chapter 3.

The random sampling survey, the newspapers research, and the visual inspection of the communities were of great help in trying to measure the intensity of the suitability factors 'Community's Need for the Facility', Inadequate Public Services', and 'Community Division or Rift Due to Social Conflicts'. In the case of the factors 'Community's Need for the Facility' and 'Inadequate Public Services' a higher suitability value was given to those census enumeration areas containing the communities that were perceived, from the survey, the newspapers, and the visual inspection, as having the greater necessity to host the facility. For the factor 'Community Division or Rift', the newspapers and the survey facilitated the process of finding the suitability values for this social criterion. From the survey the overall percentage of response for the presence of a rift in the county of Lethbridge was 51%, though the rift was not significant. This value expresses that there could be a division present in the general area under study; therefore, to those areas with a similar degree of opposition a suitability value of 5 was given. For the enumeration areas that comprise the town of Picture Butte, a suitability value of 2 was given in order to represent the high degree of division that exists in this community (71%). For some other regions, the suitability value from the newspapers was given by the degree of division that was perceived to prevail in the area.

The suitability criterion 'Age' was measured by the percentage of old people that live in the enumeration areas of the County of Lethbridge following the census of 1996. This factor gives smaller suitability values to those areas that have a smaller percentage of old people. The change in interval for each one of the levels of suitability scale varies by 10%.

For the factor 'Children in the Family' the average number of never married children per family from the census of 1996 was used. The criterion gives smaller suitability values to those census enumeration areas with a greater number of average never married children in the household. The variation for each one of the suitability levels is 0.24.

'Gradual Economic Loss' represents the change in unemployment rate. The difference between unemployment rate from the 1991 and 1996 census was obtained. Those enumeration areas with a higher increase in unemployment rate were given a greater suitability value. The variation for each one of the suitability levels is based on an interval of 3.09 unemployment rate units.

The factor 'History of Environmental Problems' is based on the number of livestock operations in each one of the enumeration areas. A greater suitability value is given to those areas that have fewer livestock operations. For this suitability criterion, the extremes of the suitability scale consists of intervals of number of operations in order to increase the areas available for facility siting and limit the use of those enumeration areas that are saturated with livestock facilities. Consequently, the middle values of the suitability scale for the present factor are included to increase the variation of suitability values in the analysis.

In the case of the airport factor 'Noise', very low suitability values were given to the different distance intervals because of the restrictive nature of the recommended distance of 15 km. Another reason to give such small suitability values is based in the consideration that aircraft noise is a very irritating impact that could also have severe health consequences if it is not addressed properly.

For the factor 'Noise as Annoyance', a linear variability was given to the values of the suitability scale. The extremes of the distances received the smallest and the largest suitability values, and the middle distance of the factor received a suitability value in between the extremes.

The suitability factor 'Traffic Congestion' was considered in two different combined ways. The first way to address the criterion was by providing suitability values with respect to the location of the facility from the communities. As it is recommended to have an airport located between 10 km and 30 km, a suitability value of 10 was given to the areas located at this range. Consequently, a value of 1 was given to the areas located between 0 and 10 km from any community, and a value of 5 to the regions located farther that 30 km. The suitability value of 5 was utilized because those areas beyond 30 km are also of some importance for locating the facility. The second way to address the criterion consisted in locating the facility close to a major road for reasons of accessibility. A decrease in 1 level of the suitability scale was given by a change in 1 km of distance, up to 10 km, considering that the later distance is the minimum recommended to have an airport located from.

The criteria 'Gradual Economic Loss', 'Inadequate public Services', and 'History of Environmental Problems' consider the same parameters as previously described for the landfill community criteria. In fact, these factors were taken from the landfill siting criteria due, mainly, to the lack of publications describing social siting criteria for the airport. These factors are also regarded as being of great importance in the case of the airport siting scenario because they can influence the siting process.

Tables 4.2 and 4.3 illustrate the association between the suitability scale and the suitability factors for the landfill and the airport scenarios. These tables also provide the representation of the suitability values for each one of the factors, the intervals, and the sources from where they were obtained.

After obtaining the new set of themes containing the suitability values for each one of the suitability criteria, an intermediate composite map was generated by means of the ' Map Calculator' command using a multiplication aggregation element.

Table 4.2 Description of Suitability Scale in Relation with The Landfill Suitability Factors

		SUITABILITY FACTORS												
		Content of Clay in Soil	Odor	Health Risk Impacts	Location from a Major Road	Odor (Nuisance)	Distance from the Site Due to Opposition	Community's Need for the Facility	Age	Family with Children	Gradual Economic Loss	Inadequate Public Services	Community Division or Rift Due to Social Conflicts	History of Environmental Problems
		Form of Measurement and Units												
		% of Clay Content	Distance in km from the Communities	Distance in km from the Communities	Distance in km from Major Roads	Distance in km from the Communities	% of Opposition	Survey, Newspapers and Visual Inspection of the Communities	% of Older People	Average of Children Never Married in the Household	Change in Unemployment Rate from 1991 to 1996	Survey, Newspapers and Visual Inspection of the Communities	Survey and Newspapers	Number of Livestock Operations in the Census Enumeration Areas
SUITABILITY SCALE	1	7%	< 0.60	< 0.90	from 0.0 to 0.20 and >20	< 0.60	> 77.3 %	No Need for The Facility	< 10%	> 2.16	> 18.51	Lack of Public Services	Complete Polarization of the Community	> 35
	2	9%	from 0.60 to 1.2	from 0.90 to 1.8	-	from 0.60 to 1.2	71.4% to 77.3%	Almost Null Need for the Facility	10% to 20%	1.92 to 2.16	15.42 to 18.51	Poor Conditions of Public Services	Very High Polarization of the Community	29 to 35
	3	10%	from 1.2 to 1.8	from 1.8 to 2.7	-	from 1.2 to 1.8	65.4% to 71.4%	Small Need for the Facility	20% to 30%	1.68 to 1.92	12.33 to 15.42	Bad Conditions of Public Services	High Polarization of the Community	24
	4	15%	from 1.8 to 2.4	from 2.7 to 3.6	-	from 1.8 to 2.4	59.4% to 65.4%	Small to Medium Need for the Facility	30% to 40%	1.44 to 1.68	9.24 to 12.33	Bad to Average Conditions of Public Services	Medium to High Polarization of the Community	22
	5	16 to 18%	from 2.4 to 3.0	from 3.6 to 4.5	from 10 to 20	from 2.4 to 3.0	53.4% to 59.4%	Medium Need for the Facility	40% to 50%	1.2 to 1.44	6.15 to 9.24	Average Conditions of Public Services	Medium Polarization of the Community	21
	6	20%	from 3.0 to 3.6	from 4.5 to 5.4	-	from 3.0 to 3.6	47.4% to 53.4%	Medium to High Need for the Facility	50% to 60%	0.96 to 1.20	3.06 to 6.15	Average to Good Conditions of Public Services	Medium to Low Polarization of the Community	20
	7	21%	from 3.6 to 4.2	from 5.4 to 6.3	-	from 3.6 to 4.2	41.5% to 47.4%	High Need for the Facility	60% to 70%	0.72 to 0.96	-0.03 to 3.06	Good Conditions of Public Services	Low Polarization of the Community	15
	8	22% to 24%	from 4.2 to 4.8	from 6.3 to 7.2	-	from 4.2 to 4.8	35.5% to 41.5%	High to Extremely High Need for the Facility	70% to 80%	0.48 to 0.72	-3.12 to - 0.03	Very Good Conditions of Public Services	Very Low Polarization of the Community	10
	9	25% to 30%	from 4.8 to 5.4	from 7.2 to 8.1	-	from 4.8 to 5.4	29.5% to 35.5%	Extremely High Need for the Facility	80% to 90%	0.24 to 0.48	-6.21 to -3.12	Excellent Conditions of Public Services	Almost Null Polarization of the Community	4 to 10
	10	> 40%	> 5.4	> 8.1	from 0.20 to 10	> 5.4	< 29.5%	Absolute Need for the Facility	> 90%	< 0.24	< -6.21	Perfect Conditions of Public Services	No Polarization of the Community	< 2

Table 4.3 Description of Suitability Scale in Relation with The Airport Suitability Factors

		SUITABILITY FACTORS						
		Noise	Noise (as Annoyance)	Traffic Congestion	Traffic Congestion	Gradual Economic Loss	Inadequate Public Services	History of Environmental Problems
		Form of Measurement and Units						
		Distance in km from the Communities	Distance in km from the Communities	Distance in km from the Communities	Distance in km from Major Roads	Change in Unemployment Rate from 1991 to 1996	Survey, Newspapers and Visual Inspection of the Communities	Number of Livestock Operations in the Census Enumeration Areas
SUITABILITY SCALE	1	< 15	< 18	0 to 10	> 9.0	> 18.51	Lack of Public Services	> 35
	2	15 to 30	-	-	8.0 to 9.0	15.42 to 18.51	Poor Conditions of Public Services	29 to 35
	3	30 to 45	-	-	7.0 to 8.0	12.33 to 15.42	Bad Conditions of Public Services	24
	4	> 45	-	-	6.0 to 7.0	9.24 to 12.33	Bad to Average Conditions of Public Services	22
	5	-	18 to 36	> 30	5.0 to 6.0	6.15 to 9.24	Average Conditions of Public Services	21
	6	-	-	-	4.0 to 5.0	3.06 to 6.15	Average to Good Conditions of Public Services	20
	7	-	-	-	3.0 to 4.0	-0.03 to 3.06	Good Conditions of Public Services	15
	8	-	-	-	2.0 to 3.0	-3.12 to - 0.03	Very Good Conditions of Public Services	10
	9	-	-	-	1.0 to 2.0	-6.21 to 3.12	Excellent Conditions of Public Services	4 to 10
	10	-	> 36	10 to 30	< 1.0	< -6.21	Perfect Conditions of Public Services	< 2

Following the WLC approach, during the aggregation process, all factors received an aggregation weight that was determined using the Analytical Hierarchy Process (AHP)[12]. The factor weights obtained were multiplied to each one of the themes depicting the criteria employed. This procedure provided the opportunity for tradeoff and compensation between the factors considered in the analysis. Tables 4.4 and 4.5 list the aggregation weights obtained from the AHP.

Table 4.4 AHP Aggregation Weights for Landfill Criteria

TYPE OF CRITERIA	FACTOR	WEIGHT VALUE
Environmental Non-Exclusionary Criteria	Soil with Greater Clay Content	0.122
	Odor	0.029
	Health Risk Impacts	0.233
	Location from a Major Road	0.044
Social and Community Criteria	Odor as a Nuisance	0.021
	Community's need for the Facility	0.107
	Distance from the Site Due to Opposition	0.066
	Age	0.084
	Family with Children	0.041
	Gradual Economic Loss	0.049
	Inadequate Public Services	0.102
	Community Division or Rift Due to Social Conflicts	0.021
	History of Environmental Problems	0.077

Table 4.5 AHP Aggregation Weights for Airport Criteria

TYPE OF CRITERIA	FACTOR	WEIGHT VALUE
Environmental Non-Exclusionary Criteria	Noise	0.656
Social and Community Criteria	Noise as Annoyance	0.232
	Traffic Congestion	0.024
	Gradual Economic Loss	0.022
	Inadequate Public Services	0.043
	History of Environmental Problems	0.024

The AHP methodology was created by Saaty (1990). It is based on the idea of decomposing the structure of the subject under scrutiny into several subsystems and their interconnections that represent the influence of the elements of one group with the elements of one other group that at the same time are influenced by the elements of other group. The procedure consists of creating hierarchies and synthesize by finding relationships through informed judgment (Saaty, 1990). The hierarchies for the landfill and airport siting attempts are depicted in figures 4.2 and 4.3 respectively. The two hierarchies obtained for the facilities under study were carefully constructed, considering faithfulness to reality and understanding of the situations and particularities of the cases.

Charnpratheep et al. (1997), explain that the applications of the AHP can be divided into two separate segments: hierarchical formulation and evaluation. The components hierarchy, levels and elements integrate hierarchical formulation. A hierarchy can be described as the conceptualization of the system structure. Levels are the different sections that comprise the hierarchy. And elements are the basic components of the hierarchy consisting of goal, criteria, subcriteria, etc. The evaluation process includes pairwise comparisons, generation of priority weights and evaluation of consistency.

Paired comparison can be defined as the relative measurement of the importance of one element over another in the hierarchy. For the paired comparisons the AHP uses a scale of intensity of importance from 1 to 9. Table 4.6 makes available the definition for each one of the values in the intensity scale, and describes the notions that support the definitions for the different element of the scale.

Table 4.6 AHP Pair Wise Comparison Scale

INTENSITY OF IMPORTANCE	DEFINITION	DESCRIPTION
1	Equal importance between the elements	To activities contribute equally to the final objective
3	Weak importance	Experience and judgment slightly favor one activity over another
5	Strong importance	Experience and judgment strongly favor one activity over another
7	Very strong or demonstrated importance	Experience and judgment very strongly favor one activity over another, its superiority is demonstrated in practice
9	Absolute important	The evidence favoring one activity over another is of the highest possible order of affirmation
2, 4, 6, 8	For compromise between values	When it is need to interpolate a compromise judgment numerically because there is no good word to describe it
Reciprocals of the values provided above	When activity *i* has one of the above nonzero members assigned to it and if compared with activity *j*, then *j* has the reciprocal value when compared with *i*.	A comparison mandated by choosing the smaller element as the unit to estimate the larger one as a multiple of that unit. A reasonable assumption.
Rationals	Ratios arising from the scale	If consistency were to be forced by obtaining n numerical values to span the matrix
1.1 to 1.9	For tied activities	When elements are close and nearly indistinguishable; moderate is 1.3 and extreme 1.9

Source: Modified from Saaty, 1990, and Charnpratheep et al., 1997.

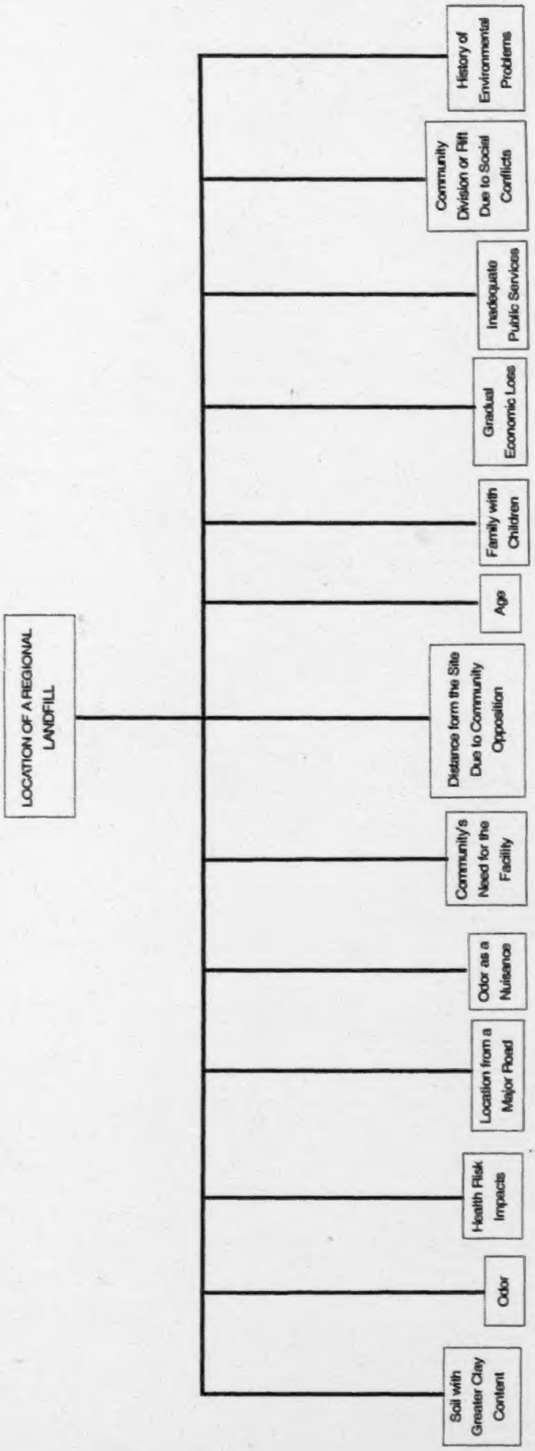

LOCATION OF A REGIONAL LANDFILL
Soil with Greater Clay Content
Odor
Health Risk Impacts
Location from a Major Road
Odor as a Nuisance
Community's Need for the Facility
Distance form the Site Due to Community Opposition
Age
Family with Children
Gradual Economic Loss
Inadequate Public Services
Community Division or Rift Due to Social Conflicts
History of Environmental Problems

Figure 4.2 Hierarchy of the Landfill Suitability Factors

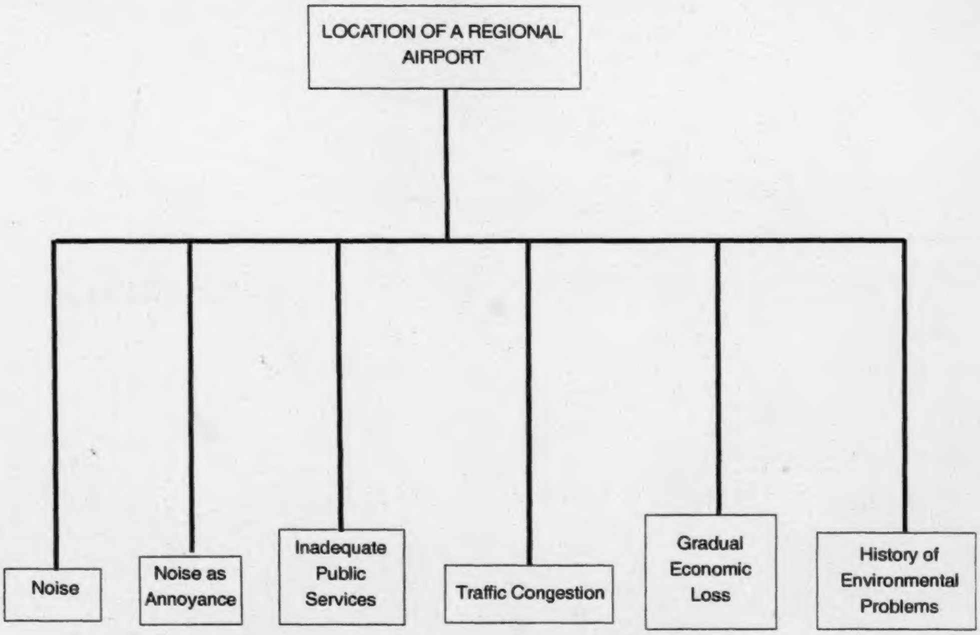

LOCATION OF A REGIONAL AIRPORT
Noise
Noise as Annoyance
Inadequate Public Services
Traffic Congestion
Gradual Economic Loss
History of Environmental Problems

Figure 4.3 Hierarchy of the Airport Suitability Factors

The pair wise comparison of priority is, by convention, the evaluation of an activity present in the column of the left against an activity existing in the row on top. As an element is equally important when compared with itself, then the main diagonal of the matrix must consist of 1's. The incorporation of a reciprocal into the matrix arrives when a column of a factor meets with the row of another factor that have been previously compared. In the case of the present study, the matrices of pairwise comparison for the landfill and the airport siting scenarios are given in tables 4.7 and 4.8.

After creating the comparison matrices, the following step consists in calculating the vector of priorities (suitability weights) for each one of the matrices. Saaty (1990), describe four simple ways to obtain the vector of priorities with crude estimates. The first method denominated the 'Crudest' consists of summing all the elements in each row and normalize by dividing each sum by the total of all the sums, therefore the results must add up to unity. The second method is based in taking the sum of all the elements in each column and form the reciprocals of these sums, after this, the priority values are obtained dividing each one of the reciprocals of the sums by the sum of all the reciprocals. This is called the 'Better' method. The third way to generate the suitability weights consists of dividing the elements of each column by the sum of that column, then add up the elements in each resulting row and divide this sum by the number of elements in the row. The fourth methodology consists of multiplying the number of elements in each row; having this new value, we take the root of the number of elements from this figure. Subsequently, the resulting values should be normalized. The last two methodologies are considered as being 'Good' procedures to find the vector of weights. The right methodology to follow in order to obtain the exact priority values is to raise the matrix to arbitrary large powers and then divide the sum of each row by the sum of each element of the matrix. In the AHP methodology the eigenvector gives the priority ordering, while the eigenvalue is a measure of consistency of the judgment (Saaty, 1990).

In our present landfill and airport analyses the approach taken to obtain the eigenvector of priorities was the fourth methodology described above, which can be considered as a good procedure to find the weights employed in the GIS analysis. As it can be observed in Table 4.7 the more important factors obtained from the AHP for the landfill siting scenario are 'Health Risk Impacts', 'Content of Clay in Soil', 'Inadequate Public Services', and 'Age'. In the case of the airport siting scenario (refer to table 4.8) the factors, 'Noise and 'Noise as Annoyance' were found to be the more predominant factors.

To measure the inconsistencies of judgment in a matrix, Saaty (1990) explains that a methodology for getting crude estimates of consistency is based on multiplying the matrix of comparisons by the vector of priorities, obtaining by this means a new vector. Once the new vector is obtained, the first component of the new vector is divided by the first component of the priority vector, the second component of the new vector by the second component of the priority vector and so on, from this calculations a new vector is created. Then, an approximation to the number λ_{max} (the maximum or principal eigenvalue) is determined by taking the sum of the new vector and dividing it by the number of components. As a result, the closer λ_{max} is to the number of components the more consistent are the results. The deviation from consistency is represented by $(\lambda_{max} - n)/(n-1)$, and is called the consistency index (C.I.).

Table 4.7 Pairwise Comparison and Attainment of Priority Eigenvalues for The Regional Landfill Using The Analytical Hierarchy Process

FACTORS	Content of Clay in Soil	Odor	Health Risk Impacts	Location from a Major Road	Odor (Nuisance)	Community's Need for the Facility	Distance from the Site Due to Opposition	Age	Family with Children	Gradual Economic Loss	Inadequate Public Services	Community Division or Rift Due to Social Conflicts	History of Environmental Problems	PRINCIPAL EIGENVECTOR	EIGENVECTOR OF PRIORITIES
Content of Clay in Soil	1	6	1/3	3	4	1/3	1/2	5	4	4	4	3	2	1.99	0.122
Odor	1/6	1	1/9	6	1/2	1/2	1/3	1/2	1/2	2	1/6	1/6	1/2	0.47	0.029
Health Risk Impacts	3	9	1	4	4	4	5	5	3	5	3	6	3	3.81	0.233
Location from a Major Road	1/3	1/6	1/4	1	6	3	1/4	4	1/3	1/4	1/5	2	2	0.73	0.044
Odor (Nuisance)	1/4	2	1/4	1/6	1	1/8	1/3	1/3	1/3	1/8	1/6	3	1/5	0.35	0.021
Community's Need for the Facility	3	2	1/4	1/3	8	1	2	4	4	3	4	4	1/4	1.76	0.107
Distance from the Site Due to Opposition	2	3	1/5	4	3	1/2	1	4	4	1/6	1/5	6	1/8	1.09	0.066
Age	1/5	2	1/5	1/4	3	1/4	1/4	1	7	7	7	8	6	1.38	0.084
Family with Children	1/4	2	1/3	3	3	1/4	1/4	1/7	1	3	1/2	3	1/8	0.68	0.041
Gradual Economic Loss	1/4	1/2	1/5	4	8	1/3	6	1/7	1/3	1	1/5	4	1	0.81	0.049
Inadequate Public Services	1/4	6	1/3	5	6	1/4	5	1/7	2	5	1	6	5	1.67	0.102
Community Division or Rift Due to Social Conflicts	1/3	6	1/6	1/2	1/3	1/4	1/6	1/8	1/3	1/4	1/6	1	1/3	0.35	0.021
History of Environmental Problems	1/2	2	1/3	1/2	5	4	8	1/6	8	1	1/5	3	1	1.27	0.077

Lambda max. =20.66 C.I. = 0.64 R.I. = 1.56 C.R. = 0.41

Table 4.8 Pairwise Comparison and Attainment of Priority Eigenvalues for The Regional Airport Using The Analytical Hierarchy Process

FACTORS	Noise	Noise as Annoyance	Inadequate Public Services	Traffic Congestion	Gradual Economic Loss	History of Environmental Problems	**PRINCIPAL EIGENVECTOR**	**EIGENVECTOR OF PRIORITIES**
Noise	1	4	8	8	9	9	5.248	0.656
Noise as Annoyance	1/4	1	1/5	8	9	9	1.856	0.232
Inadequate Public Services	1/8	5	1	5	3	1/8	0.192	0.043
Traffic Congestion	1/8	1/8	1/5	1	9	9	0.176	0.024
Gradual Economic Loss	1/9	1/9	1/3	1/9	1	3	0.344	0.022
History of Environmental Problems	1/9	1/9	8	1/9	1/3	1	0.192	0.024

lambda max. = 6.28 C.I. = 0.06 R.I. = 1.24 C.R. = 0.04

Charnpratheep et al. (1997) explain that the C.I. should be compared with the indicator obtained from an average of a large number of reciprocal matrices of the same order that have random entries, and is called the random index (R.I.). Table 4.9 illustrates the R.I. values for different number of components. The ratio between C.I. and the average R.I. for a given matrix is called the consistency ratio (C.R.). A consistency ratio with a value of 0.10 or less is considered to be acceptable.

Table 4.9 Consistency Random Index.

No. of Components	1	2	3	4	5	6	7
R.I.	0.00	0.00	0.58	0.90	1.12	1.24	1.32
No. of Components	8	9	10	11	12	13	14
R.I.	1.41	1.45	1.49	1.51	1.48	1.56	1.57

Source: Modified from Saaty, 1990, and Charnpratheep et al., 1997.

As it can be observed from Tables 4.7 and 4.8 the consistency ratio values for the landfill and the airport are 0.41 and 0.04. The consistency ratio obtained for the landfill after running several scenarios is extremely high, but it should be mentioned that it is not recommended to pursue excessively a low C.R. only to have high consistency, because the resulting priority values may not reflect the preferences of the decision maker nor the particularities of the case.

In the Landfill siting analysis, the factors evaluated made use of the following initial themes: 'Location of Cities, Towns, and Villages', 'Location of Roads', 'Clay Content in Soils', 'Livestock Operations', and 'Distribution of Census Enumeration Areas' (Figures C-1.2, C-1.3, C-1.10, C-1.14, and C-1.15 in Appendix C, Section C-1, respectively). The factors 'Odor', Health Risk Impacts', 'Odor as a Heuristic' and 'Distance from the Site Due to Community Opposition' employed the map 'Locations of the Cities, Towns, and Villages' (Figure C-1.2 in Appendix C, Section C-1), as the basic theme for the analysis. Besides 'Odor as a Heuristic', and 'Distance from the Site Due to Community Opposition', all the other social and community criteria utilized the map 'Distribution of Census Enumeration Areas' (refer to Appendix C, Section C-1, Figure C-1.15), as their primary theme.

For the regional airport analysis, the initial themes used were 'Location of Cities, Towns, and Villages', 'Location of Roads' and 'Distribution of Census Enumeration Areas' (see Appendix C, Section C-1, Figures C-1.2, C-1.3, and C-1.15 respectively). The non-exclusionary and social criteria 'Noise' and 'Noise as Annoyance' made use of the 'Location of Cities, Towns, and Villages' map as their initial theme. Meanwhile, the factors 'Gradual Economic Loss', 'Inadequate Public Services' and 'History of Environmental Problems', utilized the 'Distribution of Census Enumeration Areas' as their initial map.

In the special case of considering the factor 'History of Environmental Problems', for the landfill as well as for the airport scenarios, the theme 'Livestock Operations' (Figure C-1.12, in Appendix C, Section C-1) was used to determine the number of livestock operations per enumeration area, taking into account that this type of operations is the main environmental problem in the region.

4.2.3 Aggregation of Final Composite Map

After obtaining the three intermediate maps, one illustrating the aggregation of the constraints, the second describing the environmental non-exclusionary factors, and the third showing the aggregation of the social factors, the following step consists of joining the intermediate maps into one final composite map.

The final composite map was generated employing the 'Map Calculator' tool, which is included in the 'Spatial Analyst' extension. The aggregation factor used consisted of a summation aggregation factor that added the suitability values of all the intermediate maps involved. The final composite map had to be reclassified after the aggregation process into a suitability scale from 0 to 100. A value of 0 represents the less suitable sites, while a value of 100 denotes the most suitable locations in the region.

For the purposes of finding which areas are the most adequate to host a landfill or an airport, a threshold value is given to the suitability scale. The threshold number can be situated in the middle values of the suitability scale (i.e. 50), creating with this that all the values below the threshold are considered unsuitable, and the values above, including the threshold, are regarded the more suitable areas.

In general, the final composite map embodies the overlaying of all the maps representing the criteria and the suitability approach chosen for the siting analysis. Final composite maps are the primary support of all the final judgments implemented, and the foundation of the decision making process.

4.2.4 Facility Siting Scenarios, Modified Criteria, and Prevention Measures

Several scenarios were built in order to provide more alternatives for siting the facilities and improving the decision making process (refer to Appendices D, and E). Three different scenarios were created for the regional landfill, and three scenarios were generated for the regional airport. Each one of the scenarios consist of an intermediate map representing the exclusionary criteria, an intermediate layer describing the non-exclusionary factors, an intermediate map with the social and community criteria, and two final composite maps.

The first final composite map represents the aggregation of the three intermediate maps, the second final composite map describe only the aggregation of the exclusionary and the non-exclusionary intermediate maps, this was done with the intention to compare both final composite maps and study the way in which social and community factors can modify the siting analysis.

For both types of facilities, the first kind of scenarios (Figures D-1, D-2, D-3, D-4, and D-5, in Appendix D, and Figures E-1, E-2, E-3, E-4, and E-5, in Appendix E), did not consider any type of impact prevention or mitigation actions for the criteria involved. They were created only by means of the buffer areas and suitability values considered initially. These types of scenario provide the most conservative approach for siting the facilities; they merely offer the minimum amount of suitable area for siting purposes.

In the second type of scenarios (Figures D-6, D-7, D-8, D-9, D-10 in Appendix D, and Figures E-6, E-7, E-8, E-9, and E-10 in Appendix E), some preventive measures were considered. The criteria that were mitigated in the second scenarios were carefully considered in order to provide the adequate approaches for prevention measures. These scenarios can be located somewhere in between a conservative and risky approach due to the balancing action of the tradeoffs among the criteria.

'Minimum Distance from a Water Supply or Surface Water Intake', 'Agricultural and Forestry Land Uses', 'Air Quality Impacts', 'Odor', and 'Odor as a Heuristic', are the criteria that were mitigated in the second landfill scenario.

The 'Minimum Distance from a Water Supply Intake' constraint was not considered in developing the second scenario due to the restrictive nature of the criterion in the county region, as it can be seen comparing the intermediate maps consisting only of exclusionary criteria in scenarios No. 1 and No. 2 (Figure D-1, and Figure D-6, in Appendix D). The preventive measures that can be undertaken to minimize impacts to water supply wells consist of building a properly engineered disposal facility with leachate collection systems, bottom liners with impermeable materials, and drainage systems for water runoff. Some other prevention measures could be to shut down those water wells considered to be close to the landfill, or to use them for non-human purposes, and to isolate the underground water source from other distant intakes.

For the 'Agricultural and Forestry Land Uses' criterion, the difference from the first type of scenario (Figure D-1, in Appendix D) consists in that agricultural land type 1 and 2 were considered for landfill siting in the second scenario (Figure D-6, in Appendix D). The actions to prevent possible impacts could consists of engineering measures for the landfill such as the use of a daily cover, an intermediate cover, and recollection of blowing material in the site to avoid contamination of the agricultural areas around the landfill site. Placing a soils monitoring system in the neighboring areas of the landfill to detect any potential contamination coming from the facility could be another practical measure. It would also be important to compensate for any loss of prime agricultural land by enhancing soils and promoting lower agricultural classes.

The 'Air Quality Impacts' buffer zone in the second scenario (Figure D-6, in Appendix D) consisted of a radius of 250 m from any mayor community, cutting by half the buffer area in the first scenario (Figure D-1, in Appendix D). Besides the engineering prevention measures already mentioned in the past constraints, it would be adequate to establish an air quality monitoring system that could examine possible harmful changes in the air quality due to the facility. A more extreme approach would be to relocate the neighboring residents that are close to facility, or to expropriate the lands nearer to the landfill, giving enough compensation incentives to the owners.

For the 'Odor' factor, similar prevention considerations as for the 'Air Quality Impacts' should be contemplated. For the second scenario (Figure D-7, Appendix D), the criterion was given a buffer zone of 300 m. In the case of this criterion the most important measures to prevent any odor impacts consist in placing adequate operational practices on the active face of the landfill. The operational practices that should be considered are placing a daily cover, and cleaning of the landfill site. One of the most important measures to take into account for the "Air Quality', and 'Odor' factors, is to locate the facility down wind of any major community.

In the case of the social factor 'Odor as a Heuristic' the buffer zone considered for the analysis of the second scenario (refer to Figure D-8, Appendix D) was 250 m. For this criterion the same prevention measures should be kept in mind as were the two previous factors. It is of particular importance in locating the facility to consider background odors generated by manufacturing or agricultural operations in order to prevent saturating the area with noxious odors.

'Noise' was the only criterion that was mitigated in the second scenario for airport siting (Figure E-37, in Appendix E). In this specific case, the 15 km contour from any major community, consisting with the lowest suitability, was reduced to a distance of 7.5 km. The primary mitigation or prevention measures that should be established to minimize noise impacts are regulating the use of land adjacent to the airport, adjust the flying path of the aircrafts during approach and take off operations, use of aircraft with the latest engine technology to abate noise generation, use of noise insulated construction materials, and introduce penalty fees for the airlines that do not comply with noise standards in the airport.

For the third type of scenarios (for the landfill refer to Figures D-11 to D-15, in Appendix D, for the regional airport see Figures E-11 to E-15 in Appendix E), extreme mitigation measures were taken into consideration with the intention to find the greatest extension of area suitable for a landfill or an airport facility. This approach can be regarded as the most risky, considering that for some of the impacts it would be practically unfeasible to prevent completely or in part their effects. All the criteria already mitigated in the second set of scenarios were also utilized in the creation of the third type of scenarios, with the same magnitude and considering the same preventive measures. As it will be discussed, besides the criteria from the second scenarios, other mitigated criteria were also taken into account to obtain the third set of scenarios.

For the third landfill scenario (Figures D-11, D-12, D-13, D-14, and D-15 in Appendix D), the criteria mitigated together with that from the second scenario were ´Distance from the Site Due to Community Opposition´, ´Community Division or Rift Due to Social Conflicts´, and ´History of Environmental Problems´. For these three criteria, the suitability scale of 1 to 10 was modified to a scale of 5 to 10 in order to adjust the suitability scale to represent the possible prevention measures that could be taken.

For the factor ´Distance from the Site Due to Community Opposition´ (Figure D-13, Appendix D), the prevention and mitigation measures that can be used are: put in place monitoring systems to detect any type of contamination from the site, public involvement in the early stages of the siting process and educating the residents of the neighboring communities about the landfill siting process, the current waste disposal necessities in the region, use of modern treatment technologies, and the advantages for having the facility nearby.

In the case of the criterion ´Community Division or Rift Due to Social Conflicts´, (Figure D-13, Appendix D), the instruments for properly mitigating any rift would be to attempt to solve the problem that generated the division in the community. Other approaches would be to create a discussion environment were the conflicting parts could work on the similar points of view that they share, and create a negotiation process were the parties in conflict could receive a package of benefits suitable for their demands.

The possibilities of locating the facility diminish if there has been a past history of environmental problems in the area, therefore, it would be appropriate to establish mitigation measures for this type of factor (see Figure D-13, Appendix D). The first step would be to consider clean up measures if there is history of contamination or inadequate pollutants management. Another approach would be to consider treatment technologies in the design of the new facility that could help mitigate the present environmental adverse conditions. Another important consideration worth mentioning would be to deter residents from perceiving that the new waste disposal facility will reduce even more the quality of their already deteriorated environment.

Concerning the third airport scenario (Figures E-11, E-12, E-13, E-14 and E-15, in Appendix E) the criteria modified were 'VHF/UHF Transmitters and Receivers Must Be Located Out of Influenced Areas with Intermodulation Problems (AM, FM, and TV Stations)', 'Restrictions to Visibility by Industrial Operations or Manufacturing Processes', 'Air Quality Impacts', and 'History of Environmental Problems'. The factors changed in the second airport scenario and the previously mentioned criteria were employed to create the third scenario consisting of extreme mitigation measures.

The constraint 'VHF/UHF Transmitters and Receivers Must Be Located Out of Influenced Areas with Intermodulation Problems (AM, FM, and TV Stations)' was the most restrictive criterion in the airport analysis (refer to Figure E-11, Appendix E), therefore, it was not considered in the generation of the third scenario. One of the measures for prevention would be to acquire state-of-the-art equipment that could prevent any type of interference with the transmitters and receivers. Another prevention measure would be to relocate the radio and TV antennas that could produce interference with the equipment utilized in airport operations. Implementing regulations to enforce the use of broadcasting equipment that may possibly reduce interference with airport radio transmissions could also be a prevention or mitigation measure.

The constraint 'Restrictions to Visibility by Industrial Operations or Manufacturing Processes' was not considered for the creation of the third scenario (Figure E-11, Appendix E) also due to the constricting nature of the criterion. The prevention measures that could be implemented to control or minimize any possible visibility impacts would be to put into practice land use bylaws permitting only clean industrial processes to operate in the vicinity of an airport, to make mandatory the use of cleaner technologies for the industries adjacent to the airport, to locate the airport upwind to a group of industrial operations, and finally, to relocate those industrial or manufacturing processes that could generate eminent danger to aircraft operations.

The 'Air Quality Impacts' constraint was reduced from a lowest suitability value area of 6 km to a distance of 3 km from any major community (Figure E-11, Appendix E). Monitoring systems, locating the airport downwind of major communities, using of aircraft with cleaner engines, avoid taxing and idle operations to reduce engine emissions, and to make use of cleaner combustibles are some of the preventive measures to minimize any air quality impacts in the adjacent areas to the airport.

In the case of the constraint 'History of Environmental Problems' the same considerations apply as for the third landfill scenario. For this criterion, some of the preventive actions could consists in establish clean up measures if past environmental contamination still persist, put in place monitoring systems, and avoid that the emissions of pollutants from the facility can contribute to reduce the overall quality of the environment (see Figure E-13, Appendix E).

For each one of all the scenarios generated, another final composite map was obtained by aggregating only the intermediate composite maps representing the exclusionary and non-exclusionary environmental criteria. These types of final composite maps were created to identify the ways in which social and community factors can affect the siting process (Figures D-5, D-10, and D-15, in Appendix D, and E-5, E-10, and E-15 Appendix E). In total twelve different final composite maps were generated.

In general, for the first landfill scenario (refer to Appendix D), in which preventive measures were not taken into consideration, Figure D-1 depicts the exclusionary criteria, Figure D-1 describes non-exclusionary factors, Figure D-3 illustrates the aggregation of the social and community factors, Figure D-4 is the aggregation of the all the criteria involved, and Figure D-5 consists only in the aggregation of exclusionary and non-exclusionary criteria.

For the second landfill scenario (Appendix D), Figure D-6 illustrates the exclusionary criteria with preventive measures, Figure D-7 describes the non-exclusionary criteria with prevention measures, Figure D-8 shows the social and community criteria with preventive measures, Figure D-9 depicts the aggregation of all the mitigated criteria involved in the analysis, and Figure D-10 represents the aggregation of only exclusionary and non-exclusionary environmental criteria considering preventive measures.

In the third landfill scenario (refer also to Appendix D), the exclusionary criteria with extreme preventive measures is depicted in Figure D-11, the non-exclusionary criteria with extreme measure for prevention is illustrated in Figure D-12, the social and community criteria with extreme preventive measures are shown in Figure D-13, the final composite map considering all the criteria with extreme preventive measures is shown in Figure D-14, and the final composite map describing only environmental criteria with extreme preventive measures is provided in Figure D-15.

For the regional airport, the first scenario (refer to Appendix E) consists of Figure E-1, which describes the exclusionary constraints with no preventive measures, Figure E-2 depicting the non-exclusionary criteria without preventive measures, Figure E-3 illustrating social and community criteria with no preventive measures, Figure E-4 that represents the aggregation of all the criteria involved, and Figure E-5 describing the aggregation of the environmental criteria without considering social or community factors.

In the second airport scenario preventive measures were taken into account (see Appendix E). Figure E-6 depicts the exclusionary criteria utilized, Figure E-7 illustrates the use of non-exclusionary criteria for the scenario, Figure E-8 represents the social and community factors, Figure E-9 provides the aggregation of all the airport siting criteria with preventive measures, and Figure E-10 provides only the aggregation of the exclusionary and non-exclusionary criteria.

The third airport scenario, which considers the application of extreme preventive measures (refer to Appendix E), is formed by Figure E-11 that illustrates the exclusionary criteria, Figure E-12 depicting the non-exclusionary criteria, Figure E-13 representing the social and community criteria, Figure E-14 illustrating the aggregation of all the criteria involved, and Figure E-15 which describes the aggregation of the exclusionary and non-exclusionary criteria.

4.2.5 Absolute Suitability Value

As it was previously described, final composite maps had to be reclassified after the aggregation process into a suitability scale from 0 to 100. In the reclassification procedure, the original classification categories produced by the GIS software were reclassified into a new scale with 10 grouping ranks (from 0 to 10, 11 to 20, 21 to 30, 31 to 40, 41 to 50, 51 to 60, 61 to 70, 71 to 80, 81 to 90, and 91 to 100), as a result, this formulation provided only consistent categorical values for the final composite maps within each scenario. This type of reclassification method does not allow comparing the final composite maps of different scenarios, therefore a universal reclassification procedure had to be implemented in order to find the differences between the final composite maps of the three types of scenarios created.

The universal reclassification procedure makes use, in all the final composite maps, of the same lower and upper limits in the original software aggregation categories, obtaining with this, that the initial classification scale be the same for all final overlaid maps. After the categories are homogenized into a similar original scale for all final maps, they are reclassified into the final 10-level suitability classification.

The final composite maps obtained from the use of an absolute suitability scale can be examined in Appendix F, Figures F-1, F-2, F-3, F-4, F-5, F-6, F-7, F-8, F-9, F-10, F-12, and F-13.

For the landfill analysis (refer to Appendix F), Figure F-1 represents the final composite map with no preventive measures; Figure F-2 illustrates the final map with no-prevention measures and without community criteria. The final composite map consisting of preventive measures is given in Figure F-3. For the map illustrating preventive measures without community criteria Figure F-4 was created. Figure F-5 depicts extreme prevention measures considering community criteria. And Figure F-6 describes extreme mitigation measures with no community criteria.

In the case of the airport siting approach (in Appendix F), Figure F-7 depicts the final composite map without considering preventive measures; Figure F-8 illustrates the final composite map with no preventive measures and community criteria, Figure F-9 provides the final map in which measures for prevention were considered and also the community criteria were taken into account, Figure F-10 shows the final composite map with preventive measures and no community criteria, Figure F-11 illustrates the use of extreme preventive measures for all the criteria and considering community factors, and finally, Figure F-12 provides the final composite map with extreme mitigation measures without social criteria.

With the use of the Western Canada's Dominion Land Survey System[13], in which the County of Lethbridge is located between No. 9 and No. 17 township, and between No. 16 and No. 24 range, west of the 4th meridian, the suitable legal subdivisions, for landfill and airport siting, were selected using a threshold value of 40 from the absolute suitability scale.

The maps illustrating the selection of suitable legal subdivisions for landfill and airport siting are given in Figures G-1, G-2, G-3, G-4, G-5, G-6, G-7, G-8, G-9, G-10, G-11, and G-12 (refer to Appendix G).

Figure G-1 represents the selection of suitable legal subdivisions for the landfill final composite map considering community criteria and without preventive measures (Figure D-4 in Appendix D). Figure G-2 represents the selection of the legal subdivisions suitable for the landfill final composite map without preventive measures and not considering community criteria (Figure D-5 in Appendix D). Figure G-3 illustrates those suitable legal subdivisions of the final landfill composite map with mitigation measures and community criteria (Figure D-9, Appendix D). Figure G-4 depicts the suitable legal subdivisions selected for landfill siting using the final layer that considers preventive measures and without community criteria (Figure D-10, Appendix D). The suitable legal subdivisions selected taking into account the landfill final composite map with extreme mitigation measures and community criteria (Figure D-14, Appendix D), are given in Figure G-5. Figure G-6 provides the suitable legal subdivisions of the final composite map considering extreme preventive measures and no community criteria (Figure D-15, Appendix D).

In the case of the airport siting study, Figure G-7, illustrates the suitable legal subdivisions of the final composite map without preventive measures and considering community criteria (Figure E-4, Appendix E). Figure G-8 provides the suitable legal subdivisions for the final composite map that considers no mitigation measures and without community criteria (Figure E-5, Appendix E). Figure G-9 represents the selection of the airport suitable legal subdivisions of the final composite map considering mitigation measures and community factors (Figure E-9 in Appendix E). Figure G-10 describes the suitable legal subdivisions of the final composite map which considers preventive measures and no community criteria (see Figure E-10, in Appendix E). Figure G-11 depicts the legal subdivisions of the airport final composite map considering extreme preventive measures and community criteria (refer to Appendix E, Figure E-14). And finally, the suitable legal subdivisions of the final airport composite map that considers extreme preventive measures and no community criteria (refer to Figure E-15, Appendix E) are given in Figure G-12.

5.0.0 Results and Discussion of Results

5.1.0 Results from the Survey

5.1.1 Percentages and Frequencies

Some of the results obtained from the survey analysis are of main importance for this research; they provide additional insight into the problem of the siting process in the region selected for the study.

When taking into consideration the results of the three communities together, almost 45 % (refer to Table B-2.1.8, Section B-2, Appendix B) of the respondents answered that they believe that the quality of the environment has decrease in recent times. This apparently negative condition can be of major importance in the siting of the regional landfill. As it can be inferred, the reference point in the prospect theory diagram (Figure 2.1 in Chapter 2) is already in the loses section for almost half of the population, this situation can suggest that people could perceive that hosting the facility would be a detrimental action for their already deteriorated environment, but if the right siting approach is taken, people would realize that the facility could improve the actual quality of the environment in the region, and by this means, give greater possibilities of success to the siting effort.

In the case of having a rift or a division in the area under study, it was observed from the results of the survey that 51 % of the respondents answered that there is a rift between groups in the communities (Table B-2.1.16, and Table B-2.1.17, in Section B-2, Appendix B). This situation is more pronounced in the town of Picture Butte where more than 70% of the people surveyed responded that there is a division in the community (see Tables B-2.4.13, and B-2.4.14 in Section B-2 of Appendix B). In the other hand, most of the respondents answered that this rift was not a serious or significant situation; therefore, special attention should be paid during the siting process in order to prevent any further polarization of the conflicting parties.

Another important finding is that the majority of the respondents answered that they are very concerned for the global quality of the environment, and about the quality of the environment in the surrounding area of the community (refer to Table B-2.1.11, and Table B-2.1.12, Section B-2, in Appendix B). As a result of this situation, active public participation can be expected during the landfill or airport siting effort. Residents should be invited and encourage to participate as a stakeholder in the earlier stages of the siting process. In this public participation scenario, community demands and uncertainties should be properly addressed.

Questions No. 22 and No. 23 of the survey (Table B-2.1.25, and Table B-2.1.26, in Section B-2, Appendix B), try to provide some introspection into the possibility of the existence of a negative economic situation in the region. For these questions, 33 % of the respondents answered that there has been the loss of a facility that contributed to the economic status of the community, and 40% of the respondents answered that there is the need to improve the economy of the community since there has been a sudden economic loss. This specific situation can create a favorable environment for siting a facility due to the necessity that exists in the communities to increase and diversify their economic revenues.

As it has been observed in previous studies (Lober and Green, 1994), for the regional landfill, as well as for the regional airport, public opposition declines with distance from the facility. Most of the respondents are less opposed to accept the facility at a distance greater than 8 km. This situation could have serious repercussions if the any of the facilities under analysis is located within the 8 km distance without the full approval of the surrounding communities (from Table B-2.1.34 to Table B-2.1.37, and from Table B-2.1.47 to Table B-2.1.50 in Section B-2, Appendix B).

Most of the surveyed people also responded that they would complain with authorities or would participate actively in oppositional groups if they perceived that facility was located not far enough from their residencies, or if the facility could pose a predictable danger to their communities.

Some other interesting results can be extracted from question No. 27, which explains that almost 50% of the people surveyed answered that they have knowledge of any past or present environmental problems in the region. This condition could bring difficulties to the facility siting process if people could relate in anyway the possible impacts created by the facility with their past negative experiences related to the environmental.

Some of the demographic characteristics of the survey respondents in the three communities can also be significant. It can observed that more of 60% of the public surveyed were people with 45 years of age or older, and that approximately 81% of the residents surveyed are married individuals (Tables B-2.1.31, and B-2.1.32 respectively in Section B-2 of Appendix B). These demographic considerations can be of vital importance since some studies (Hunter and Leyden, 1995, and Lober, 1995) have demonstrated that older people, and married individuals are less opposed to host the facility nearby their place of residency.

5.1.2 Crosstabulation Analysis (Parametric Tests)

The results of the crosstabulation analysis are significant because they were able to provide some insight in determining which of the twenty independent variables considered have a significant relationship with the dependent variable 'Public Opposition Towards the Facility at 8 km'.

Taking into consideration the combined survey result for the three communities, the independent variables significant for the landfill siting are 'Decrease in the quality of the Environment in the Community in Recent Times' at the 0.05 confidence level, and the variables 'Change in the Quality on the Standard of Living in the Community for the Past 2 Years' and 'Change in the Quality of Public Services in the Community during the Past 2 Years' at the 0.01 confidence level (see Table B-3.1.1, Section B-3, in Appendix B). For the airport siting effort none of the independent variables seem to have a significant association with the dependent variable (refer to Table B-3.1.2, Section B-3, in Appendix B).

For the landfill siting effort in the town of Picture Butte (Table B-3.4.1, Section B-3, Appendix B), only the independent variable 'Very Concerned About the Environment in the Community' had a significant association with the dependent variable at the 0.1 significance level. Meanwhile, in the case of the airport siting process (refer to Table B-3.4.2, Section B-3, in Appendix B), the variables 'Future

Conditions in the Quality of the Environment', and 'In the Community there are Programs to Improve the Quality of the Environment' have a significant relationship at the 0.1 and 0.05 significance levels respectively.

In the Village of Barons the landfill siting analysis (see Table B-3.2.1, Section B-3, Appendix B) have four significant independent variables. The variable 'What Would Be the Future Conditions in the Quality of the Environment' is significant at the 0.05 level and its association with the independent variable is negative. Another variable significant at the 0.05 level is 'Change in the Quality of Public Services in the Community during the Past 2 Years'. The variables 'Very Concerned About the Global Environment' and 'People Very Concerned about the Quality of the Environment in the Community' are significant at the 0.1 significance level. The later variable has a negative association with the dependent variable. For the airport siting exercise (refer to Table B-3.2.2, Section B-2, in Appendix B), the dependent variable 'Very Concerned About the Environment in the Community' has a significant relationship at the 0.01 significance level. At the 0.05 significance level, the variables 'Future conditions in the Quality of the Environment', and 'People Participation in Programs to Improve the Environment' have a negative association with the dependent variable. For the 0.1 significance level, the variable 'People Very Concerned about the Quality of the Environment in the Community' has also a negative relationship with the dependent variable.

The airport crosstabulation analysis for the Village of Nobleford (refer to Table B-3.3.2, Section B-3, in Appendix B) did not produced any significant relationships between the independent variables and the dependent variable. In the case of the landfill analysis (see Table B-3.3.1, Section B-3, in Appendix B), three are the variables that have a significant association with the dependent variable. The variables 'Change in the Quality on the Standard of Living in the Community for the Past 2 Years' and 'Change in the Quality of Public Services in the Community during the Past 2 Years' are significant at the 0.01 significance level, meanwhile, the variable 'Decrease in the Quality of the Environment in the Community in Recent Times' has an association significant at the 0.05 level.

All the significant variables mentioned above, could be considered as good predictors of the dependant variable for the different locations where they have been measured. For example, in the case of the combined results, it could be said that people who consider that there has been a decrease in the quality of the environment in the community in recent times, that there has been a decrease in the change in the quality on the standard of living in the community for the past 2 years, and that consider that there has been a decrease in the quality of public services in the community during the past 2 years, could be more opposed to accept the facility nearby their place of residency.

5.1.3 Ordinal Regression Analysis

An ordinal regression model tries to identify what could be the better predictors for a dependent variable, considering the interaction of all the independent variables at the same time. This is the main difference with the crosstabulation analysis, where a pair comparison is made between the dependant variable and the independent variables, each one at a time. The results of the ordinal regression models can be observed on Appendix B, Section B-5.

The most important findings obtained by the used of the ordinal regression approach can be observed in the combined landfill siting models No. 1, No. 3, and No. 4 (refer to Appendix B, Section B.4). In all of these models, the variables 'Children in the House' and 'Change in the Quality of Public Services in the Community for the Past 2 Years' have a significant relationship with the dependent variable. The negative signs of the parameters estimates mean that while opposition to the facility rises, the variables 'Children in the Family' and 'Change in the Quality of Public Services in the Community for the Past 2 Years' diminish. These results support the findings of some other authors (Hunter and Leyden, 1995), where the variable 'Children in the Family' has been found to be significant in the siting of LULUs. In the case of the variable 'Change in the Quality of Public Services in the Community for the Past 2 Years' it is very interesting to find that this factor came out to be a good predictor in the models. A possible explanation for this variable to be significant is that people consider that the public services in their community are already insufficient and that adding a new facility in the vicinity would reduce their public services even more.

The outcomes of the accompanying texts to measure the fitting for the models, their goodness of fit, and the overall goodness of fit (pseudo R^2 Measures), can be considered to be very similar. Therefore, from the results of these texts, we can affirm that any of the models mentioned above, especially model No. 4, can be effectively used to predict the opposition towards siting a landfill in the area.

For the airport siting, the only ordinal regression model obtained with the combined results of the survey did not provide many significant results. The only interesting finding in this segment is that the variable 'Change in the Quality of Public Services in the Community for the Past 2 Years' was also found to be significant in predicting the independent variable. The explanation for this situation could be the same as the one previously described for the landfill siting.

As for the outcomes of the additional statistical tests, they show that the independent variables do not fit the model well. The significance of the model-fitting test is not under the 0.1 significance level as it is require in order to have a good model. The goodness-of-fit test gives relatively small chi-square values, and moderately high significance measures. And for the overall goodness-of-fit, the pseudo R^2 values are also relatively small.

The models obtained for both facilities in each one of the three communities considered in the survey, did not provide any significant results. This situation can be due to the sample size used in the survey for every community.

5.2.0 Results from Newspapers Research

Newspaper articles provided a large number of interesting and key findings that were applied in the research. The search for significant articles extents for a period of 5 years and 8 months, from April 1995 to December 2000. From this period, all the newspaper articles that described meaningful information were read and listed as possible predictors of the actual political, social, demographic, economic, and environmental situations of the region.

Possibly, the most important finding was that in the County of Lethbridge the greatest environmental, social, political, and economic impacts are related to livestock operations. The County of Lethbridge is mainly a rural area, where farming activities are the main source of revenues and employment. On the other hand these sorts of operations are the major causes of environmental impacts in the region. Treatment of manure, livestock slurry, odor, water, wastewater, and solid waste disposal are the major environmental problems related to livestock and feedlot activities.

A major event that took place in the area was the building of a hog plant on the periphery of the City of Lethbridge. 141 articles were written in lapse of one year and one month about the plant that consisted of a hog farm and a slaughterhouse. Most of the articles were not in favor of siting the facility. After all the commotion that this situation created, the hog plant was never sited in the region due to public opposition.

Overall, 44 articles were written about feedlots and livestock impacts. These articles describe the negative environmental situation that exists in the region due to the lack of safe livestock management techniques.

During the years of 1995, and 1996 a new landfill was considered to be built in the surrounding areas to the City of Lethbridge, but the plan failed after the initial public opposition started to rise. As a supplementary action the actual functioning landfill was expanded and its life span extended.

In the case of water and wastewater treatment concerns, 20 articles explain the conditions of water quality in the region. One main aspect to notice from these articles is that water and wastewater treatment operations for the area are not competent in processing the quantities of pollutants that find their way into the water. Another important consideration in this topic is that livestock operations are mostly blamed for the detrimental situation of the water in county.

Rural emergency rooms have been in danger of being lost in several of the county communities. 12 articles explain the events about the closure of the ERs in the region. Even though these medical services were maintained operational, their services were considered to be overstretched.

In relation to the economic aspects, the southern region of the Province of Alberta, and especially the City and the County of Lethbridge, have had one of the lowest unemployment rates in the country. 9 articles describe this condition. Along with the low unemployment rate, 35 articles describe the plan to invest in a large food factory that will be located in the vicinity of the City of Lethbridge.

From the newspaper articles allocated to the Town of Monarch and the Village of Barons we can identify that these communities have a great need to improve their present economic situation. The Town of Monarch has been loosing its economic power since the new highway bypassed the community. The Village of barons has been losing economic power besides loosing some of its community resources, for example the district school. Given that the present conditions in both communities might still be that of a great necessity for improvement in their economic status, a landfill or an airport could be of enormous help to alleviate or mitigate this adverse situation.

Considering all the facts mentioned above, and if the right siting approaches are established, the possibilities of locating a regional airport or a regional landfill increase by taking advantage of some of the negative conditions that prevail in the region. The proposed facility should address some of the most detrimental background impacts in its master plan in order to generate a better reputation for the facility, and to boost the chances of having a successful siting attempt. As an example, a regional solid waste treatment facility could integrate a composting project to treat the manure and some of the organic material coming from the livestock and farming operations. At the same time, the final result of compost process could be sold to the cultivators as a fertilizer. Another good example may possibly be that an airport or a landfill could incorporate into their regular activities the handling of some of the water or wastewater requiring treatment in the region.

Special attention must be paid to the fact that there has been past unsuccessful attempts to locate new LULUs in the region. This condition must be thoroughly analyzed in order to find the incorrect approaches that were taken, and to avoid making the same mistakes. It can also be expected a large public participation in the siting attempt, therefore, it will be necessary to implement a methodology in which the public can have an active role from the beginning of the siting process.

5.3.0 Results from the GIS Analysis

Probably the most relevant result attained by means of the GIS analysis is having the opportunity of creating a clear visual delimitation of the most suitable areas through the suitability values for siting the facilities (refer to the final composite maps in Appendices D, E, and F). An even sharper definition of the suitable areas can be determined by the use of an adaptable suitability threshold value that best fit the necessities of the siting process (refer to maps in Appendix G).

Another important finding is the great impact that the social and community criteria hold in the siting analysis. As it can be observed by comparing the final composite maps (refer to Appendices D, E, and F), the social criteria can drastically modify the shape or reduce the suitability values of the most favorable areas, and consequently, decrease the amount of suitable land for airport or landfill siting. For all the scenarios constructed in the analysis and for both types of facilities, a summary of the extension of area available per suitability group is given in Table H-1, in Appendix H.

By making use of the extensive capabilities of the GIS methodology the creation of different siting scenarios was achieved. The formation of these scenarios was one of the central objectives of the research, and their intention was to improve the decision making process in the landfill and airport siting. Each one of the scenarios is a different alternative that can help the experts implement the more adequate approach, taking into consideration the particular conditions that prevail in the region.

In the first landfill scenario (refer to Table H-1 in Appendix H), there are not areas available to locate the facility in neither of the final maps with or without considering community criteria. There are not areas with suitability values greater than the threshold value of 40 that was arbitrarily selected. This situation can be also observed in Figures G-1, and G-2 in Appendix G, where there are not suitable legal subdivisions available. The fact that there is a lack of areas with a higher suitability value than the threshold is due to the constraining characteristics of some of the criteria, specially the constraint 'Minimum Distance from a Public Water Supply or Surface Water Intake'. It is also an important point of discussion in Table H-1 the condition that there is more suitable area available for the airport than for the landfill, comparing the results for the threshold at a suitability value of 40. The major reasons for this situation are the smaller number of constraints used for the airport scenarios in comparison with the landfill scenarios, the mitigation measures considered for the airport, and the tradeoff conditions for both type of facilities using the AHP weights.

6.0.0 Conclusions and Recommendations

In location analyses, GIS systems are exceptional instruments that contribute greatly to a better understanding of the siting process. Through the use of modern GIS methodologies and tools, not only maps or illustrations depicting primary suitable areas for siting LULUs can be generated, but also predictions for future conditions in the region can be calculated. Another interesting application of GIS methodologies is the opportunity of constructing several sets of possible alternatives that can enrich and make more efficient the decision making process. In general, any type of information that may have a geographical interpretation, or that may contain a geographical location can be manipulated and analyzed with GIS systems.

In the case of the present investigation, GIS systems were the primary tools employed in assembling, modifying, and analyzing all the information acquired by different means (i.e. literature review, newspapers research, sample survey, census information, etc), in the creation of three different scenarios for each one of the facilities, and the construction of the final composite maps from where the final results were extracted.

Some of the positive characteristics that were found through the implementation of GIS systems include the production of accurate and reliable results for the multicriteria decision making and for the allocation of resources. GIS techniques are very flexible to use, and once the complete GIS process is in place, it is fairly straightforward to manipulate, transform new data, update previous information, and to generate new results.

On the other hand, GIS systems can be a very expensive methodology, especially if there is not a system already in place, if there are not computer databases readily available corresponding to the region under study, and if there is the necessity to hire personnel specialized on handling GIS operations. Another drawback observed is that GIS methodologies can become excessively time consuming, and on occasions even frustrating, especially during the obtaining of the existing databases, and during the implementation stage.

In conclusion, the decision of using GIS as a facility siting tool must be carefully and thoroughly studied, predominantly, in cases where financial resources are limited and where time constraints exist.

Newspapers research and random sampling surveys can help in measuring the intensity of some of the community criteria by evaluating the perceptions of the public, and by estimating the actual conditions of the region under study. These important tools also assist in measuring the attitudes and possible behaviors of the people, strengthening by these means the decision making process.

The most interesting finding, and possibly the most significant, is the one that refers to the possibility of aggregating physical criteria with social and community factors, and obtain an integrated and comprehensive facility siting analysis through the implementation of a GIS system. Since social and community criteria were found to have a major impact in the airport and landfill siting exercises, attention should be paid to their inclusion in any other type of facility siting studies to better model the social conditions that prevail in the region.

The potential for trade-offs between all the community criteria and some of the physical factors was also examined making use of weighted values derived from the AHP technique. The higher weights were given to the criteria considered more important in the siting analysis; therefore, those factors deemed to be more significant had a greater suitability contribution in the creation of the final composite maps. The trade-offs among the criteria were of great importance for this investigation because they provided in the composite final maps a more accurate representation of the factors that were specifically perceived as being more significant for the analysis.

In dealing with the GIS methodology, most of the responsibility belongs to the GIS analyst, who is in charge of loading the databases into the software, standardizing the information, manipulating the data, and generating the final outcomes of the analysis. Since the facility siting process is a very abstract procedure, the GIS analyst should have enough knowledge of the characteristics and current events in the region in order to make the right assumptions, and to give the most adequate suitability values to the different factors considered in the analysis.

It is highly recommended, in the case of both facilities, that the siting efforts would be aimed at addressing and mitigating some of the major environmental and social impacts that are currently taking place in the County and in the City of Lethbridge. This approach could help to create better conditions for siting any of the facilities in the region. In addition, the attempts to consider addressing some of the present impacts in the area, can also improve the image and the reputation of the facility with the public. These considerations are especially important in the case of the regional landfill, which is basically perceived as a hazardous facility by laypeople.

The present investigation succeeded in accomplishing its main purpose, which was the formulation of a methodology that could integrate physical and social criteria into a comprehensive siting analysis. Another significant accomplishment of the research was the possibility of modeling public attitudes and behaviors and incorporate them into the siting analysis. The research also succeeded in creating a general identification of the suitable areas that could be of potential use for locating a regional landfill or a regional airport in the County of Lethbridge, through the use of a GIS system as the pillar of the analysis, and employing physical and community criteria.

More research is required in the case that specific siting locations had already been selected. Direct inspections, on site studies and monitoring, and local sample surveys are strongly recommended in order to find out which of the particular locations are the most suitable to host the facilities considered in the analysis.

In the case that the preselected location for the facility is situated close to the boundaries of the neighboring jurisdictions to the County of Lethbridge, the geographic limits of the GIS analysis should be extended beyond the county borders to address possible concerns emerging from this particular condition.

Endnotes

1. Scheaffer at al. (1990), explained that a systematic sampling survey is a sample survey design that is extensively used mainly because it simplifies the sample selection process. The basic idea of a systematic sampling consists in selecting an appropriate interval for choosing the final names from a list of possible subjects. Having a random starting point the names are selected at equal intervals along the list.

Systematic random sampling is in some cases a more practical alternative to some other types of random sampling because it is easier to perform in the field and therefore is less subject to selection errors by field workers, and can give greater information per unit cost (Scheaffer at al. 1990).

2. Goodman and Kruskal's Tau is a measure of association at the nominal level which reflects a proportion reduction in error (PRE) when values of the independent variable are used to predict values of the dependent variable. Values range from 0 to 1. The assumptions of this test consist in randomness and a nominal scale of the variables (Champion, 1981).

3. Lambda x is a procedure that measures the degree of association between two nominal variables. This statistical tool does not have many restrictive assumptions, it only requires randomness and data at the nominal level that can be crosstabulated into some r X c tabular form. The main advantages of lambda are that it can provide a PRE interpretation, and that it can also reflect the degree or strength of association between the variables (Champion, 1981).

4. Somers´ d is a measure of association designed for crosstabulated data calculated accordingly to an ordinal scale. This test is a simple method for determining which variable is the better predictor. It is basically a PRE measure. The primary assumptions of the Somers' d test are two variables measured according to an ordinal scale and randomness. Somers' d can accomplish perfect negative or perfect positive association, ranging from –1.00 to +1.00, and the strength of the association between the variables can be evaluated by examining the absolute value of Somers' d (Champion, 1981).

5. The ordinal regression is a procedure that allows creating models, generating predictions, and evaluating the importance of various predictor variables in cases where the dependent variable is of ordinal category. In general, ordinal regression gives us the opportunity to model the dependence of a polytomous ordinal response on a group of factors or covariates (SPSS, 1999).

6. Spatial Analyst is an ARCView extension that gives additional raster based capabilities to the GIS software. The spatial analyst extension provides tools to query, create, analyze, and map cell based raster data and to execute integrated vector and raster analysis using feature and grid based themes (Holh and Mayo, 1999).

7. The ArcView Projection Utility is a tool that allows projecting or changing already projected shapefiles from one coordinate system to another. It also allows datum transformations to be carried out (Holh and Mayo, 1999).

8. As described by Maling (1973), coordinates are a suitable method of indicating positions in a space. Coordinates are used to specify locations in a two-dimensional plane, for example, points on a graph. Coordinate systems can be classified primarily into two major categories, geographic coordinate system and projected coordinate system.

A projected coordinate system makes use of Cartesian or rectangular coordinates. In a projected coordinate system, locations are identified by x and y coordinates on a grid or network of lines, with the origin at the center of the grid. Each point has two values that reference the point to the central location. One specifies its horizontal position and the other, its vertical position. The two values are called the x coordinate and y coordinate. Using this notation, the coordinates at the origin are $x = 0$ and $y = 0$ and it has the advantage that lengths, angles, and areas are constant across the two dimensions (Maling, 1973, and Richardus and Adler, 1972).

A geographic coordinate system locates positions on the Earth using a three-dimensional spherical surface. A point is referenced by its longitude and latitude values. Longitude and latitude are angles measured from the Earth's center to a point on the Earth's surface. The angles are measured basically in decimal degrees or degrees, minutes and seconds (DMS), but in some occasions they can also be measured in gradients (Maling, 1973).

In the geographic coordinate system, East-west (horizontal) lines are of equal latitude and they are named parallels. North-south (Vertical) lines are lines of equal longitude and called meridians. These lines cover the globe and create a gridded network named a graticule.

9. Madej (2001) explains that maps are flat representations of curved surfaces of the globe. The process of transforming a three-dimensional space onto a two-dimensional map is called projection. Projection equations assist to convert data from a geographical location (latitude and longitude) on a sphere or spheroid to a representative location on a flat surface.

The process of projecting three-dimensional information inevitably could alter at least one of these following properties, area, direction, shape, distance, and often more. Because measurements of one or more of these distorted properties are often used to make decisions, knowledge of the distortions produced by projection employed is of primary importance (Madej, 2001).

10. The UTM projection system can be defined as the map projection that divides the globe into sixty zones, each one spanning six degrees of longitude. Each zone has its own central meridian with a distance of 3 degrees west and 3 degrees east of that central meridian, and the origin for every zone is the Equator and its central meridian. In order to eliminate negative coordinates, the projection modifies the coordinate values at the origin. Therefore the value assigned to the central meridian is the false easting, and the value assigned to the Equator is the false northing. For locations in the Northern Hemisphere, the origin is assigned a false easting of 500,000, and a false northing of 0. For locations in the Southern Hemisphere, the starting point is assigned a false easting of 500,000 and a false northing of 10,000,000. The limits for the UTM zones are 84° North, and 80° South, when the regions under study are beyond these limits the Universal Polar Stereographic projection (UPS) must be used (Richardus and Adler, 1972, Maling, 1973, and Madej, 2001).

11. As described by Madej (2001), a datum is a group of parameters that define a collection of control points with known geometric associations, either through measurement or calculations, and they also define a coordinate system. A datum is described by a spheroid, which approximates the shape of the Earth, and the spheroid's position relative to the center of the Earth. Because there can be many spheroids representing the shape of the Earth, there could be many datums derived from them. For the North American Datum of 1983, the GRS80 spheroid is used, and its origin is the Earth's center of mass.

12. The Analytical Hierarchy Process (AHP) is a theory of measurement that is interested in deriving dominance priorities or weights from paired comparisons of standardized or grouped factors with respect to a similar characteristic. (Saaty, 1990). This procedure is used to determine the priority weights of a set of criteria (Charnpratheep et al. 1997).

Charnpratheep et al. (1997) also explains that the applications of the AHP may be separated into two phases: hierarchical formulation and evaluation. A hierarchical design starts with the goal, down to the criteria or variables, following by the subcriteria and finally the different alternative scenarios from which a decision will be obtained. The main components of the hierarchical designs are hierarchy, levels, and elements.

Pair-wise comparisons, attainment of priority weights, and measures of consistency are key elements of the evaluation phase.

13. The Western Canada's Dominion Land Survey System was established in 1890 by the Dominion Government of Canada to offer a logical instrument of land distribution. With the use of this system an area greater than 200 million acres was sub-divided into 1,250,000 quarter sections, of 160 acres each. The grid is formed by townships that move along east and west direction, from each meridian, and ranges that run north to south starting at the 49th parallel. Townships are rows of land that are labeled numerically, and with a distance of 6 miles wide. Ranges are columns of land also with a length of 6 miles long that start at each meridian. Ranges increase westward and are labeled numerically starting at 1 (U of A, 1999).

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APPENDIX A

TABLE A-1 GENERAL LANDFILL SITING CRITERIA

I) ENVIRONMENTAL CRITERIA			
a) EXCLUSIONARY CRITERIA			
CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE / EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
1. Climatic and meteorological suitable properties of the site	Not found Maximum or minimal Evaporation/Temperature/Air dispersion meteorology	-	Manitoba Hazardous Waste Management Corp., (1988)
2. Minimum distance from a river	0.8 km	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter., (1996)
3. Minimum distance from a public water supply, surface water intake	1.6 km	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter., (1996)
4. Minimum distance from a permanent body of water	0.8 km	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter., (1996)
5. Groundwater travel time of a public water supply	1 year	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter., (1996)
6. Minimum depth to water table	46 m	-	Manitoba Hazardous Waste Management Corp., (1988)
7. Minimum material (clay or tilt) thickness and hydraulic conductivity over an aquifer	10 m material thickness and 10^{-7} m/s of hydraulic conductivity	-	Manitoba Hazardous Waste Management Corp., (1988)
8. Site outside wetlands	Essential	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter., (1996). United States Environmental Protection Agency (1993)
9. Location of the site from floodplain level	100 years	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter., (1996). United States Environmental Protection Agency (1993)
10. Location of the site from coastal floodplain level	100 years	-	Baban, Serwan M.J.; Flannagan, Joseph, (1998)
11. Minimum distance from any occupied residence or collection of 10 or more houses	0.45 km	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter., (1996)
12. Minimum buffer zone between the site and the adjacent property	15 m	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter., (1996)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE / EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
13. Facility located out of densely populated areas	Essential	1.609 km from areas with an urban growth boundary of 2,500 people or less, 3.219 miles km from areas with an urban growth boundary of between 2,500 and 10,000 people, and 4.828 km from areas with and urban growth boundary of 10,000 people or greater.	Baban, Serwan M.J.; Flannagan, Joseph, (1998)
14. Minimum distance from any airport runway used by piston engine aircraft	1250 m (or 4 km*, 8 km**)	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter, (1996). United States Environmental Protection Agency, (1993)*. Transport Canada, Aviation, (1989)**
15. Minimum distance from any airport runway used by turbo jet aircraft	3050 m (or 4 km*, 8 km**)	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter, (1996). United States Environmental Protection Agency, (1993)*. Transport Canada, Aviation, (1989)**
16. Minimum distance from any airport runway used by turbine engine aircraft	3050 m (or 4 km*, 8 km**)	-	Noble, George, (1992). United States Environmental Protection Agency, (1993)*. Transport Canada, Aviation, (1989)**
17. Minimum distance from a railway line	500 m	-	Baban, Serwan M.J.; Flannagan, Joseph, (1998)
18. Distance from any area used periodically by endangered or threatened species	1.6 km	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter., (1996)
19. Minimum distance from a historic or archeological site	500 m	-	Baban, Serwan M.J.; Flannagan, Joseph, (1998)
20. Facilities should not be allowed in recreational, cultural, aesthetic areas, key wild life habitat or high natural risk areas	Essential	-	Baban, Serwan M.J.; Flannagan, Joseph, (1998). Manitoba Hazardous Waste Management Corp., (1988)
21. Outside of active or inactive mining areas, and proposed development areas	Essential	-	Manitoba Hazardous Waste Management Corp., (1988)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE / EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
22. Agricultural and forestry land uses	Do not take agricultural (CLI) classes 1, 2, 3 or Forest production lands classes 2 and 3	Agricultural, and forestry lowest types	Baban, Serwan M.J.; Flannagan, Joseph, (1998). Manitoba Hazardous Waste Management Corp., (1988).Environment Council of Alberta, (1985). Environment Council of Alberta, (1981)
23. Air quality impacts	1. CH_4 concentrations below 5% in air 2. Odoriferous substances required up to 10,000 fold dilution of landfill gas 3. Vinyl chloride below 10 ppb 4. Maximum distace impact 500 m	Ambient concentration, Type of source, etc.	Zeiss, Chris and Atwater, James, (1993)
		1. Ambient ground level Concentration at a distance X from the landfill boundary: $C_{(X)} = \frac{2q}{\sqrt{2\pi\pi_z\bar{u}}} \exp\left[-\frac{1}{2}\frac{z^2}{\sigma_z^2}\right]$	Zeiss, Chris and Atwater, James, (1993)
		2. For a finite line source: $C_{(X,Y)} = \frac{2q}{\sqrt{2\pi\pi_z\bar{u}}}\left[\mathrm{erf}\left[-\frac{L/2-y}{\sqrt{2}\sigma_y}\right]+\mathrm{erf}\left[\frac{L/2++y}{\sqrt{2\sigma_y}}\right]\right]$	Zeiss, Chris and Atwater, James, (1993)
		3. For the centreline concentration of y = 0 : $C_{(X,0)} = \frac{2q}{\sqrt{2\pi\pi_z\bar{u}}}\mathrm{erf}\left[\frac{L}{2\sqrt{2}\sigma_y}\right]$	Zeiss, Chris and Atwater, James, (1993)
		4. Virtual point source, area source: $C_{(x,0,0)} = \frac{Q}{\pi\sigma_y\sigma_z\bar{u}}$	Zeiss, Chris and Atwater, James, (1993)
24. Minimum distance from a Geological fault	61 m	-	Manitoba Hazardous Waste Management Corp., (1988). United States Environmental Protection Agency (1993)
25. Location outside of seismic impact zones	Essential	-	United States Environmental Protection Agency (1993)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE / EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
26. Location outside of unstable or geologically complex areas	Essential	-	United States Environmental Protection Agency (1993)
27. Located out of discontinous permafrost zones	Essential	-	Manitoba Hazardous Waste Management Corp., (1988)
28. Maximum slope of the siting area	15 %	-	Manitoba Hazardous Waste Management Corp., (1988)
29. Landfills must have engineered structural features to contain any human and environmental hazards imposed by the facility and provide the capacity for monitoring	Essential	-	Manitoba Hazardous Waste Management Corp., (1988)
30. Minimum service design period for a landfill	20 years	Based on the estimate waste production, landfill height and waste density	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter., (1996)
31. The site must not be located in areas underlain by sand, gravel deposits and/or bedrock near the surface	Essential (minimum 5 m. from the surface in the case of bedrock)	-	Omni-McCann Consultants Ltd., (1994). Omni-McCann Consultants Ltd. (1995)
32. The landfill must be located so as not to interfere with, or impact on, any irrigation system	Essential	-	Omni-McCann Consultants Ltd., (1994).
33. Facility located outside of gas/oil wells, pipelines, and/or processing or storage facilities.	Essential	-	Omni-McCann Consultants Ltd., (1994). Omni-McCann Consultants Ltd. (1995)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE / EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
b) NON EXCLUSIONARY			
1. Location of the facility from the waste generation source	Within 10 km	Desirable for economic and management porpoises	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter., (1996)
2. Noise	Maximum impact distance 300 - 400 m	1. The area where the equivalent sound pressure level is significantly over background	Zeiss, Chris and Atwater, James, (1993). Zeiss, Chris, (1997)
		2. The area where the facility noise is above the recognition threshold, but not significantly over the background level	Zeiss, Chris and Atwater, James, (1993)
		3. Attenuation distance from the on-site locations to background noise levels is given by the following equations.	Zeiss, Chris and Atwater, James, (1993)
		a) Reduction due to wave divergence: $L_b = L_S - 20 \log\left[\frac{r_b}{r_s}\right]$ b) Attenuation due to grass and low shrubs: $A_d = (0.18 \log f - 0.31) r$ c) Attenuation due to forests: $A_{e2} = 0.01 f^{\frac{1}{3}} r$ d) Attenuation due to barriers: $A_{e3} = \text{Function of Fresnel Number} N = \frac{\delta}{\lambda}$	Zeiss, Chris and Atwater, James, (1993)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE / EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
3. Odor	1. Dilutions from 10,000 to 100,000 fold to reduce landfill gas to below the odor threshold. 2. 500 - 600 m from the boundary.	1. If one or more odor complaints are initiated by residents of a community and are verified by local authorities	Zeiss, Chris and Atwater, James, (1993). Zeiss, Chris, (19 97)
		2. If 20 or more odor complains are initiated without verification	Zeiss, Chris and Atwater, James, (1993)
		3. If odors extend beyond the property limits of the source and occur more than once or last more than one day in any three months, and exceed any intensity of 7 dilutions to threshold as measured by the Barney-cheney Scentometer	Zeiss, Chris and Atwater, James, (1993)
		4. Relationship of measured dilutions to concentration: $N_X = \frac{C_X}{C_T}$	Zeiss, Chris and Atwater, James, (1993)
		5. Required dilution from pure landfill gas to odor threshold: $N_{Thres} = \frac{C_{LF}}{C_T}$	Zeiss, Chris and Atwater, James, (1993)
		6. Required dilution to threshold: $N_{Thres} = N_0 * N_R = \frac{C_{LF}}{C_0} * \frac{C_0}{C_T}$	Zeiss, Chris and Atwater, James, (1993)
		7. Actual odor levels prediction: $N_{Thres} = N_0 * N_{TR} * N_X = \frac{C_{LF}}{C_0} * \frac{C_0}{C_x} * \frac{C_x}{C_T} = \frac{C_{LF}}{C_T}$	Zeiss, Chris and Atwater, James, (1993)
		8. Determination of odor frequencies: $OF_j = \sum_{i=1}^{n} g_{ij} * f_i * N_x$	Zeiss, Chris and Atwater, James, (1993)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE / EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
4. Health risk impacts	Maximum impact distance of 900 m from the site boundary.	Odor dilution at 100% to avoid any possible health risk impact	Zeiss, Chris and Atwater, James, (1993)
5. Location from a major road	0.2-10 km	Economic, transportation and management reasons	Baban, Serwan M.J.; Flannagan, Joseph, (1998)
6. Minimum population density in predominant downwind direction	Desirable	-	Manitoba Hazardous Waste Management Corp., (1988)
7. Site outside registered land claims	Desirable	-	Manitoba Hazardous Waste Management Corp., (1988)
8. The site should be located in an area having low annual precipitation	Desirable	-	Omni-McCann Consultants Ltd., (1994)
II) SOCIAL AND COMMUNITY CRITERIA			
a) HEURISTIC COGNITIVE JUDGMENT			
1. Risks Perception due to the facility	-	-	Gerrard; Michel B., (1995). Lober, Douglas J., (1995). Greenberger; Leonard S., (1991). Slovic, Paul; Fischhoff, Baruch; and Lichtenstein, Sarah. (1980)
2. Health risks impacts	-	-	Lober, Douglas J.; Green, Donald P., (1994). Lake, Robert W., (1993)
3. Noise	-	-	Zeiss, Chris and Atwater, James, (1993). Rowe, Megan, (1998). Lober, Douglas J., (1995). Hunter, Susan; Leyden, Kevin M., (1995)
4. Odor	-	-	Zeiss, Chris and Atwater, James, (1993). Rowe, Megan, (1998). Lober, Douglas J., (1995)
5. Visual impacts		-	Zeiss, Chris and Atwater, James, (1993). Rowe, Megan, (1998). Lober, Douglas J., (1995). Lober, Douglas J., (1995)
6. Stigma	-	-	Lober, Douglas J., (1995). Zeiss, Chris., (1997). Greenberg, Michael; hughes, James, (1993)
7. Loss of community status	-	-	Lake, Robert W., (1993)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE / EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
8. Decrease quality of life	-	-	Poirier Elliot, Michael L., (1984)
9. Loss of ambience and aesthetics of the community	-	-	Lake, Robert W., (1993)
10. Community's need for the facility (i.e. recent loss of revenues or economic power)	-	-	Thaler, Richard, (1985). Thaler, Richard (1980)
11. Public notions of gains and losses (Prospect Theory)	-	-	Thaler, Richard, (1985). Thaler, Richard (1980)
12. Distance from the site	-	Opposition to siting the facility within a certain distance can be determine by the following equations: $\text{Log of opposition}_{\text{Landfill X miles}} = 0.22 + (-0.40 * \ln X \text{ miles}) = Y$ $\text{Percent of opposition}_{\text{Landfill}} = \frac{1}{1+e^{-Y}} = \%$	Lober, Douglas J., (1995). Lober, Douglas J.; Green, Donald P., (1994)
a) Fairness	-	-	Lober, Douglas J., (1995). Hunter, Susan; Leyden, Kevin M., (1995). Stein, Debra (1996). Kuhn, Richard G.; Ballard, Kevin R., (1998). United States Environmental Protection Agency, (1993)
b) Equity	-	-	Lober, Douglas J., (1995). Lober, Douglas J.; Green, Donald P., (1994)
c) Efficiency	-	-	Lober, Douglas J., (1995)
d) Effectiveness	-	-	Lober, Douglas J., (1995)
13. Sustainability	-	-	Lober, Douglas J., (1995)
14. Disruption	-	-	Greenberg, Michael; hughes, James, (1993)
15. Fear	-	-	Zeiss, Chris., (1997). Poirier Elliot, Michael L., (1984). Kuhn, Richard G.; Ballard, Kevin R., (1998)
16. Uncertainty	-	-	Zeiss, Chris., (1997)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE / EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
17. Distrust of industry, technology innovation, proponents, institutions and government	-	-	Lober, Douglas J., (1995). Hunter, Susan; Leyden, Kevin M., (1995). Poirier Elliot, Michael L., (1984). Kuhn, Richard G.; Ballard, Kevin R., (1998). Hine et al., (1997)
18. Distance of public or private services to the facility	-	-	Hunter, Susan; Leyden, Kevin M., (1995)
19. Location of the facility or facility services from where people live	-	-	Lober, Douglas J., (1995)
20. Poor prognosis for remediation	-	-	Greenberg, Michael; hughes, James, (1993)
21. Personal beliefs (e.g. noxious facilities protect from outsiders)	-	-	Greenberg, Michael; hughes, James, (1993)
b) DEMOGRAPHIC			
1. Gender	-	-	Lober, Douglas J., (1995). Hunter, Susan; Leyden, Kevin M., (1995)
2. Age	-	-	Lober, Douglas J., (1995). Hunter, Susan; Leyden, Kevin M., (1995)
3. Education	-	-	Hunter, Susan; Leyden, Kevin M., (1995)
4. Income	-	-	Hunter, Susan; Leyden, Kevin M., (1995)
5. Family with children	-	-	Lober, Douglas J., (1995). Hunter, Susan; Leyden, Kevin M., (1995)
6. Population density	-	-	Vari, Anna, (1994)
7. Time of residency	-	-	Brown, P. (1997)
8. Hierarchist, Individualist, and egalitarian mentalities	-	-	Hunter, Susan; Leyden, Kevin M., (1995). Vari, Anna, (1994)
c) LOCATIONAL			
1. Suburban sprawl	-	-	Lake, Robert W., (1993)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE / EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
2. Traffic congestion	-	-	Lober, Douglas J., (1995). Lake, Robert W., (1993)
d) ECONOMIC			
1. Gradual economic loss	-	-	Lake, Robert W., (1993)
2. Inadequate public services	-	-	Lake, Robert W., (1993)
3. Low density development	-	-	Lake, Robert W., (1993)
4. Decrease of property value	-	-	Lober, Douglas J., (1995). Colwell, Peter F. (1997)
5. Economic need promotes tolerance	-	-	Lober, Douglas J., (1995) . Hine et al., (1997)
6. The cost associated with developing and operating the site should be minimized while recognizing the importance of environmental preservation	-	-	Omni-McCann Consultants Ltd., (1994)
e) POLITICAL AND CULTURAL			
1. Socio-economic segregation	-	-	Lake, Robert W., (1993)
2. Racial segregation	-	-	Lake, Robert W., (1993)
3. Ethnic segregation	-	-	Lake, Robert W., (1993)
4. Disbelieve to data and technical expertise	-	-	Lake, Robert W., (1993). Stallings, Robert A., (1991)
5. Moral dilemma	-	-	Stein, Debra, (1996)
6. Political disputes not technical	-	-	Maize, Kennedy P.; McCaughey, John, (1992)
7. Political membership	-	-	Brown, P. (1997)
8. Cultural membership	-	-	Hine et al., (1997)
9. Ideological or organizational membership	-	-	Lober, Douglas J., (1995)
10. Community division or rift due to social conflicts	-	-	Hunter, Susan; Leyden, Kevin M., (1995)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE / EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
11. Sympathy	-	-	Hunter, Susan; Leyden, Kevin M., (1995)
12. Commitment	-	-	Hunter, Susan; Leyden, Kevin M., (1995)
13. Citizen duty	-	-	Hunter, Susan; Leyden, Kevin M., (1995)
14. Morality implication	-	-	Hunter, Susan; Leyden, Kevin M., (1995)
15. Cohesiveness of the community	-	-	Lober, Douglas J., (1995)
16. Solidarity, democratic participation or influencing action	-	-	Lober, Douglas J., (1995). Skollerhorn, Erland, (1998)
17.History of environmental problems	-	-	Stallings, Robert A., (1991)
18. Lack of information for the public	-	-	Hine et al., (1997)
19. Racial issues	-	-	Lober, Douglas J.; Green, Donald P., (1994)
20. Minorities overburden	-	-	Lober, Douglas J.; Green, Donald P., (1994). Greenberg, Michael; hughes, James, (1993)
21. Rural communities overburden	-	-	Lober, Douglas J.; Green, Donald P., (1994)
22. low socioeconomic status public targeted	-	-	Lober, Douglas J.; Green, Donald P., (1994). Greenberg, Michael; hughes, James, (1993)
23. Facilities accepted in economic downturn	-	-	Kuhn, Richard G.; Ballard, Kevin R., (1998). Hine et al., (1997)
24. Knowledge of environmental issues	-	-	Brown, P. (1997)
f) SITING IMPROVEMENT PROCEDURES			
1. Informing public about risks	-	-	Slovic, Paul; Fischhoff, Baruch; and Lichtenstein, Sarah, (1980)
2. Move land to higher value uses	-	-	Colwell, Peter F. (1997)
3. Compensate by change in land use	-	-	Colwell, Peter F. (1997)
4. Create new instruments for negotiation and planning	-	-	Colwell, Peter F. (1997). Inhaber, Herbert (1992)
5. Public Education and awareness about the proposed facility	-	-	Draman, Grace A., (1995)
6. Compensation	-	-	Kurland, Orin M, (1992). Kleindorfer, Paul R. (1986)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE / EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
7. Mitigation measures	-	-	Hine et al., (1997). Kurland, Orin M., (1992)
8. Consensus	-	-	Yarzebinski, Joseph A., (1992)
9. Public participation and collaboration	-	-	Hine et al., (1997). Yarzebinski, Joseph A., (1992)
10. Bestow public with decision making power	-	-	Colwell, Peter F. (1997). Hine et al., (1997)
11. Concessions and incentives to communities	-	-	American Planning Association, (1992)
12. Negotiation with the host community	-	-	Kleindorfer, Paul R., (1986)
13. Detection, mitigation and management systems vs. prediction and prevention measures	-	-	Poirier Elliot, Michael L., (1984)
14. Willingness or interest to receive the facility	-	-	Kuhn, Richard G.; Ballard, Kevin R., (1998). Pushchak, Ron; Rocha, Cecilia (1998)
15. Make facility siting a voluntary and cooperative process	-	-	Kuhn, Richard G.; Ballard, Kevin R., (1998).
16. Give social and political considerations adequate attention	-	-	Kuhn, Richard G.; Ballard, Kevin R., (1998).
17. Improve personal risk communication methods	-	-	Young, Steward, (1990)
18. Open means of communication	-	-	Young, Steward, (1990)
19. Create balance between risk and progress	-	-	Young, Steward, (1990)
20. Open access to information by the public	-	-	Hine et al., (1997)
21. Identify trade-offs	-	-	Lober, Douglas J., (1995)
22. The nature of the site should minimize future city or municipality liability	-	-	Omni-McCann Consultants Ltd., (1994)
g) INTEREST CONFLICTS			
1. Lack of understanding among siting stakeholders	-	-	Lake, Robert W., (1993)
2. Unfair wealth distribution	-	-	Reams, Margaret A., and Templet, Paul H., (1996)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE / EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
3. Opposition is a barrier for capital interests	-	-	Lake, Robert W., (1993)
4. Conflict between community and capital	-	-	Lake, Robert W., (1993)
5. State intervention promotes property rights, free market, support capital accumulation	-	-	Lake, Robert W., (1993)
6. Lack of communication	-	-	Poirier Elliot, Michael L., (1984). Colwell, Peter F. (1997). Young, Michael G. (1998)
7. Hostility and aversion towards noxious facilities	-	-	Kuhn, Richard G.; Ballard, Kevin R., (1998).
8. Public isolation from decision making	-	-	Kuhn, Richard G.; Ballard, Kevin R., (1998).
9. Individuals that wish to preserve the community	-	-	Hine et al., (1997)
10. Lack of confidence in government, regulations and regulatory agencies	-	-	Hine et al., (1997)
11. Creates the atmosphere that illegitimate or irrational selfish reasons move public interests	-	-	Hunter, Susan; Leyden, Kevin M., (1995)
12. The way people felt they were treated in the decision process	-	-	Hunter, Susan; Leyden, Kevin M., (1995)
13. Public believe they have lack of control of their own destiny	-	-	Kunreuther, H., Patrick, R., (1991)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE / EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
		h) BENEFITS	
1. Jobs	-	-	Lober, Douglas J., (1995)
2. Tax revenues	-	-	Lober, Douglas J., (1995)
3. Better public services	-	-	Lober, Douglas J., (1995)
4. Better means of communication and transport	-	-	Lober, Douglas J., (1995)

NOTATION LIST

Aei = Noise attenuation factors
Cx = Concentration at receptor at distance x [mg m-3]
CLF = Concentration in landfill gas [mg m-3]
Co = Concentration of landfill surface [mg m-3]
CT = Odor threshold concentration [mg m-3]
f= Sound frequency [Hz]
fi = Frequency of climatic situation indexed by stability and wind speed
gij = Frequency of wind directions under climatic situation i towards receptor point j
L = Cross-wind width of source
Lb = Sound level at recognition boundary [dBA]
Ls. = Sound level at site boundary [dBA]
Nx = Dilution ratio measured at x[m] downwind [-]
NAct = No. NTV = Actual total dilution ratio
NO = Initial dilution ratio due to mixing at landfill surface
NR = Required dilution from dispersion to reach
NThres = Dilution factor required to reach odor threshold (= 10,000 x Young and Parker, $N_{Thres} = \frac{N_{Thres}}{N_o}$
NTV= Dilution from surface dispersion
OFj Odor frequency at receptor point j
q = Linear emission rate

$$\left[\frac{g}{m-s}\right]$$

TABLE A-2 GENERAL AIRPORT SITING CRITERIA

I) ENVIRONMENTAL CRITERIA			
a) EXCLUSIONARY CRITERIA			
CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE/EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
1 a. Minimum distance from any landfill to an airport runway used by piston engine aircraft	1250 m (or 4 km*, 8 km**)	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter, (1996). United States Environmental Protection Agency, (1993)*. Transport Canada, Aviation, (1989)**
1 b. Minimum distance from any landfill to an airport runway used by turbo jet aircraft	3050 m (or 4 km*, 8 km**)	-	Siddiqui, Muhammad; Everett, Jess; and Vieux, Baxter, (1996). United States Environmental Protection Agency, (1993)*. Transport Canada, Aviation, (1989)**
1c. Minimum distance from any landfill to an airport runway used by turbine engine aircraft	3050 m (or 4 km*, 8 km**)	-	Noble, George, (1992). United States Environmental Protection Agency, (1993)*. Transport Canada, Aviation, (1989)**
6. Minimum depth to water table	Not found	-	Johnson, Roger; Pedoe, N.; Tunstall, (1996). Hofstetter, Helmut, (1996)
7. Hydraulic conductivity of the soil	Not found	-	Johnson, Roger; Pedoe, N.; Tunstall, (1996). Hofstetter, Helmut, (1996)
2.. Facilities should not be allowed in recreational, cultural, historic, archeological, aesthetic areas, key wild life habitat or high natural risk areas	Essential	-	Baban, Serwan M.J.; Flannagan, Joseph., (1998). Manitoba Hazardous Waste Management Corp. (1998)
3. Land uses in the vicinity of Airports in accordance with the Noise Exposure Forecast (NEF) and the Noise Exposure Projection (NEP) plans	Required	NEFs and NEPs official contours by Transport Canada	Transport Canada, Aviation, (1989) (1993)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE/EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
4. The facility should be located in an area with the following dimensions of Obstacle Limitation Surfaces	Outer Surface[1] : 1) A common plane at a constant elevation of 45 m above the elevation of the aerodrome reference point 2) An imaginary surface shall be established at 9 m above the ground when the plane is less than 9 m above the surface of the ground 3)The Outer Surface measured from the designated aerodrome reference point or pints shall extend to a horizontal distance of at least 4000 m where the code number is 1, 2 or 3; or must be determined by an aeronautical study where the code number is 4, but never less than 4000 m.	-	Transport Canada, Aviation, (1989) (1993)
	Takeoff/Approach Areas and Surfaces[2] : 1) Precision Approach Runway-Category I and II Length of inner edge must be as per strip width, Divergence (min.) 15% , Length (min.) 6000 m., and Slope of 1.66% for the first 3000 and thereafter 2%. 2) Non-Precision Approach Runway Length of inner edge must be as per strip width, Divergence (min.) 10% for code number 1 and 2, and 15% for code number 3 and 4, Length (min.) 2500 for code 1 and 2, and 3000 m. for code 3 and 4, and Slope of 3.33% for the two first number code and 2.5% for code number 3 and 4. 3) Non-Precision Approach Runway Length of inner edge must be as per strip width, Divergence (min.) 10% for all code numbers, Length (min.) 2500 for code 1 and 2, and 3000 m. for code 3 and 4, Slope of 5%, 4%, 2.5% and 2.5 % for code number1, 2, 3 and 4 respectively.	-	Transport Canada, Aviation, (1989) (1993)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE/EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
	Transitional Surface[3] : 1) The slope of a transitional surface measured in the vertical perpendicular to the runway shall be 14.3% for all instrument runway code numbers and for non-instrument runways, code 3 and 4. 2) A slope of 20.0 % for non-instrument runways code, 1 and 2.	-	Transport Canada, Aviation, (1989) (1993)
5. Primary Surveillance Radar (PSR) required distances from structures that cause interference	No building or other structure should be allowed to exceed a height of 5 m below the geodetic height of the antenna platform within 300 m. From 300 to 1000 m from the radar site the upper limit on the height of an allowable structure is increased at a rate of approximately 0.007 m per meter.	-	Transport Canada, Aviation, (1989) (1993)
6. Secondary Surveillance Radar (SSR) required distances from structures that cause interference	The same as for Primary Surveillance Radar, but in addition all buildings or other structures within 1000 must be build with no metallic materials.	-	Transport Canada, Aviation, (1989) (1993)
7. Control of the size and construction materials of buildings and other structures to avoid reduction in volume of radar coverage	Essential	-	Transport Canada, Aviation, (1989)
8. No structures should be built exceeding the height of the weather radar antenna	Within a radius of 300 m	-	Transport Canada, Aviation, (1989)
9. VHF/UHF transmitters and receivers must be located out of areas of electrical noise generation	Transmitters and receivers located at least 1.6 km from noise source	-	Transport Canada, Aviation, (1989)
10. VHF/UHF transmitters and receivers must be located out of influenced areas with intermodulation problems (AM, FM and TV stations)	Minimum distance 8 km	-	Transport Canada, Aviation, (1989)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE/EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
11. Airport Easements	Area No. 1: 300 m from the geometric center of the site	This is an area enclosed by a circle with a radius of 300 m centered on the geometric center of the site. Within this area there must be no trees, fences, wire lines, structures, machinery or buildings, except with written consent	Transport Canada, Aviation, (1989)
	Area No. 2: 600 m from the geometric center of the site	This is an area enclosed by a circle with a radius of 600 m centered on the geometric center of the site, but excluding the area including in area 1. In this area, the height, measure to the highest point of structures and buildings having large metal content and wire lines and fences shall not subtend a vertical angle of more than 1.2 degrees or extend more than 0.5 degrees above the horizontal plane as measured from the array center.	Transport Canada, Aviation, (1989)
12. Prohibit the location of garbage dumps, food waste, landfill sites, coastal commercial fish processing plants, and /or the planting of crops that attract birds, or affect flight visibility.	Minimum distance 8 km	-	Transport Canada, Aviation, (1989)
13. Restrictions to visibility by industrial operations or manufacturing processes	Minimum distance 5 miles	-	Transport Canada, Aviation, (1989)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE/EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
14. Air quality impacts	6 km (or 31 km for Hydrocarbons)	Carbon monoxide (CO) average concentration over 1-hour period: 35 mg/m^3 or 35 ppm	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Carbon monoxide (CO) average concentration over 8-hour period: 15 mg/m^3 or 9 ppm	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Nitrogen dioxide (NO_2) average concentration over 1-hour period: 400 μg/m^3	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Nitrogen dioxide (NO_2) average concentration over 24-hour period: 200 μg/m^3	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Nitrogen dioxide annual arithmetic mean: 100 μg/m^3 or 0.05 ppm	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Ozone (O_3) average concentration over 1-hour period: 160 μg/m^3 or 0.12 ppm	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Ozone (O_3) average concentration over 24-hour period: 50 μg/m^3	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Ozone annual arithmetic mean: 30 μg/m^3	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Total suspended particles (TSP) average concentration over 24-hour period: 120 μg/m^3 or 150 ppm	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
		Total suspended particles annual geometric mean: 70 μg/m^3 or 50 ppm	Taylor, Leonard, (1996). Yamartino, R., Smith, D., Bremer, S., Heinold, D., Lamich, D., Taylor, B., (1980).
b) NON EXCLUSIONARY CRITERIA			
1. Noise	Located 15,000 m. away from a mejor urban area (distance of the take off/approach zone)	A modeled area of the 60 LAeq noise contour during day and night operations	Thomas, Callum, (1996). Ashford, N., Wright, P., (1979, 1992) .
		Noise below 87 PNdB produced by aircraft	Thomas, Callum, (1996). Ashford, N., Wright, P., (1979, 1992) .
2. Odor	Not found	-	Wayson, Roger, (1996)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE/EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
3. Hazardous Materials and Substances storage, and management plans	Essential	-	Grantham, J. D., (1996). Johnson, Roger; Pedoe, N. Tunstall, (1996). Edmonton International Airport, (1997). Edmonton Airports, Environment Department (1998)
4. Health impacts	not found	-	Thomas, Callum, (1996)
5. Terrain configuration of the site	Within 1000 m of the radar antenna	Should have a rough surface, or be well covered with trees and shrubs, to prevent ground reflection	Transport Canada, Aviation, (1989)
6. Structures or natural growth should not block the line of sight from the radar to the air space on approach to runaways or to other critical air space	Desired	-	Transport Canada, Aviation, (1989)
II) SOCIAL AND COMMUNITY CRITERIA			
a) HEURISTIC COGNITIVE JUDGMENT CRITERIA			
1. Dread towards the facility	-	-	Thomas, Callum, (1996)
2. Noise (annoyance)	Between 15 to 18 km	-	Thomas, Callum, (1996)
3. Odor	-	-	Wayson, Roger, (1996)
b) LOCATIONAL CRITERIA			
1. Suburban sprawl	-	-	Lake, Robert W., (1993).
2. Traffic congestion	-	-	Lake, Robert W., (1993). Lober, Douglas J., (1995)
c) ECONOMIC CRITERIA			
1. Regional development	-	-	Thomas, Callum, (1996)
1. Gradual economic loss	-	-	Lake, Robert W., (1993)
2. Inadequate public services	-	-	Lake, Robert W., (1993)
d) POLITICAL AND CULTURAL CRITERIA			
1. History of environmental problems	-	-	Stallings, Robert A., (1991)

CRITERIA, IMPACTS AND OTHER ISSUES	DISTANCE/EXTENT	METHODOLOGIES FOR EVALUATION OR EVALUATION DEFINITION	REFERENCE
e) BENEFITS CRITERIA			
1. Increase in global transportation			Thomas, Callum, (1996)
2. Jobs			Thomas, Callum, (1996)

NOTES:
1. An Outer Surface is the area required for the protection of aircraft conducting a circling procedure or maneuvering on the vicinity of an aerodrome. The Outer Surface establishes the height above which may be necessary to restrict the erection of new structures which would constitute and obstruction or to remove or mark obstacles to ensure a satisfactory level of safety and aircraft maneuvering.
2. Takeoff/Approach Areas and surfaces are established intended to be used for the takeoff and landing of aircraft.
3. Transitional Surface is a complex surface along the sides of the runway strip and part of the approach surface that slopes up to the outer surface. Its purpose is to ensure the safety of aircraft at low altitudes displaced from the runway centerline in an approach or missing approach phase.

APPENDIX B

SECTION B-1

University of Alberta

Environmental Engineering

Control No. ____________

FACILITY SITING RESEARCH SURVEY

A better understanding of the community criteria required to find the most suitable locations for facilities described as "Locally Unwanted Land Uses" is important. Siting efforts can take into consideration different sets of environmental and community criteria to search for the most adequate sites available in a region. Environmental criteria can be defined as the different measures that are taken to prevent the potential for negative impacts in the surrounding area where a facility is planned to be sited. They can also be particular attributes (i.e., type of soil or terrain slope) from a particular site that are considered to preserve or enhance the quality of its environmental conditions. Community criteria refer to those personal characteristics that describe people's beliefs, attitudes and behaviors with respect to facility siting. These characteristics can vary from person to person or can be similar among a group of people.

This survey is part of a thesis research project that intends to improve the siting process for landfills and airports through the use of a more comprehensive and sensitive set of community and environmental criteria.

The present survey is created for research purposes only, and none of the information provided will be disclosed to third parties in any manner that compromises the confidentiality of the person surveyed. Please feel free to answer as much as you wish of the survey, or stop responding at any time if you believe that the questions are inadequate.

Remember that by answering this survey you are assisting environmental managers to create and implement the appropriate tools to help improve the quality of the environment.

Thank you for your participation!

1. For you, which of the following is the worst case of environmental disasters related with undesired facilities (please cross one of the answers).

○ Chernobyl in Ukraine ○ Love Canal in the U.S. ○ Los Frailes in Spain ○ Three Mile Island in the U.S. ○ Bophal in India

SECTION A. In this section we would like to ask some questions concerning the present situation of the environment in general, and the surrounding environment in your community.

Instructions: Please cross the answer in the circled area that better describe your position.

2. I believe that technology should be blamed for all the existing environmental deterioration.

○ I agree ○ Neither I agree nor disagree ○ I disagree

3. I believe that technology can help to remedy environmental deterioration.

○ I agree ○ Neither I agree nor disagree ○ I disagree

4. I believe that the existing methodologies used for solid waste disposal (i.e. engineered landfills and incinerators) are effective.

○ I agree ○ Neither I agree nor disagree ○ I disagree

5. I believe that the quality of the environment in my community has decreased in recent times.

○ I agree ○ Neither I agree nor disagree ○ I disagree

6. I believe that the present environmental conditions in my community are unbearable.

○ I agree ○ Neither I agree nor disagree ○ I disagree

7. I believe that with the passing of time the quality of the environment in my community will be:

○ Better ○ Neither better nor worse ○ Worse

8. I am very concerned about the global quality of the environment.

○ I agree ○ Neither I agree nor disagree ○ I disagree

9. I am very concerned about the quality of the environment in the surrounding area of my community.

○ I agree ○ Neither I agree nor disagree ○ I disagree

Section A, cont.

10. In my community, people are very concerned about the quality of the environment.

I agree　　Neither I agree nor disagree　　I disagree

11. In my community, people participate actively in programs designed to improve the quality of the environment.

I agree　　Neither I agree nor disagree　　I disagree

12. In my community, there are programs specially instated to improve the quality of the environment.

I agree　　Neither I agree nor disagree　　I disagree

SECTION B. In this section we would like to ask you a little bit about the current socio-economic, political and cultural conditions in your community.

Instructions: Please cross the answer in the circled area that best describes the situation in your community.

13. Does a rift exist between factions of your community?

Yes　　No

14. If there is any type of rift between the members of your community, do you believe that this is a serious situation?

Yes　　No　　Neither serious nor insignificant　　No rift present

15. Do you consider that the economic growth of your community has?

Strongly Decreased　　Decreased　　No Change　　Increased　　Strongly Increased

16. Do you think that in your community, during the past 5 years, unemployment has?

Strongly Decreased　　Decreased　　No Change　　Increased　　Strongly Increased

Section B, Cont.

17. Do you think that in your community, during the past 5 years, the average income has?

○ Strongly Decreased ○ Decreased ○ No Change ○ Increased ○ Strongly Increased

18. Do you believe that in your community the quality of public health conditions have?

○ Strongly Decreased ○ Decreased ○ No Change ○ Increased ○ Strongly Increased

19. Do you believe that in recent times (past 2 years), the quality on the standard of living in your community has?

○ Strongly Decreased ○ Decreased ○ No Change ○ Increased ○ Strongly Increased

20. Do you believe that in recent times (past 2 years), the quality of public services in your community has?

○ Strongly Decreased ○ Decreased ○ No Change ○ Increased ○ Strongly Increased

21. Do you believe that the present public health conditions that prevail in your community are unbearable?

○ Yes ○ No

22. Has there been the recent loss of a facility that contributed greatly to the economical status of your community?

○ Yes ○ No ○ Don't Know

23. Do you believe that there is the need to improve the economy of your community due to a recent or sudden economic loss?

○ Yes ○ No ○ Don't Know

24. Do you believe that cultural characteristics of your community, such as traditions, language, ethnic representation, and religious belief, are at risk of being lost?

○ Yes ○ No

25. Do you consider that your community is losing political weight with the provincial government?

○ Yes ○ No

Section B, Cont.

26. Do you consider that your community is losing political weight with the federal government?

○ Yes ○ No

27. Do you know of any past or present problem (or problems) related with the environment in your community?

○ Yes ○ No

In the case of any environmental problem in your community please make a list of them giving the approximate date (mm/dd/yy) of occurrence if possible*:

___/___/_____ ____________________

___/___/_____ ____________________

___/___/_____ ____________________

___/___/_____ ____________________

___/___/_____ ____________________

*In case of more than 5 environmental problems please write on the back of the paper.

SECTION C. In this section we would like to ask some questions about you and your personal attitudes and feelings towards landfill and airport siting.

Instructions: Please cross the answer in the circled area that better describe your feelings, or openly answer those questions where there is a space in blank.

28. What year were you born?

Answer: 19_____

29. Are you currently married?

○ Yes ○ No

30. Are there any persons under the age of 18 living in your house?

○ Yes ○ No

Section C, Cont.

In the hypothetical case that a landfill were going to be located in the vicinity of your community, and all of the environmental criteria required were met during the siting process. How would you feel:

31. If the municipal landfill were located 1.6 km (1 miles) from where you live?

Strongly opposed	Opposed	Neither opposed nor supportive	Supportive	Strongly supportive

32. If the municipal landfill were located 8 km (5 miles) from where you live?

Strongly opposed	Opposed	Neither opposed nor supportive	Supportive	Strongly supportive

33. If the municipal landfill were located 25 km (15.5 mile) from where you live?

Strongly opposed	Opposed	Neither opposed nor supportive	Supportive	Strongly supportive

34. If the municipal landfill were located 32 km (20 miles) from where you live?

Strongly opposed	Opposed	Neither opposed nor supportive	Supportive	Strongly supportive

35. You would feel supportive toward a municipal landfill siting process if it were located at ___________ Km from where you live.

36. You would feel opposed toward a municipal landfill siting process if it were located at ___________ Km from where you live.

37. If a municipal landfill were located within the distance described in question number 36 what would you do? (Please cross all the answers if more than one).

Do nothing	Complaint with authorities	Move out of your house	Sell your house	Active participation in opposition groups

38. If a municipal landfill were located in the vicinity, do you believe that your community has adequate road access infrastructure to host such facility?

Yes	No	Don't Know

Section C, Cont.

39. If a municipal landfill were located in the vicinity, do you believe that your community has the adequate contingency equipment in case of a fire emergency?

Yes | No | Don't Know

In the hypothetical case that a regional airport were going to be located in the vicinity of your community, and all of the environmental criteria required were met during the siting process. How would you feel:

40. If the regional airport were located 1.6 km (1 miles) from where you live?

Strongly opposed | Opposed | Neither opposed nor supportive | Supportive | Strongly supportive

41. If the regional airport were located 8 km (5 miles) from where you live?

Strongly opposed | Opposed | Neither opposed nor supportive | Supportive | Strongly supportive

42. If the regional airport were located 25 km (15.5 miles) from where you live?

Strongly opposed | Opposed | Neither opposed nor supportive | Supportive | Strongly supportive

43. If the regional airport were located 32 km (20 miles) from where you live?

Strongly opposed | Opposed | Neither opposed nor supportive | Supportive | Strongly supportive

44. You would feel supportive toward a regional airport siting process if it were located at ___________ Km from where you live.

45. You would feel opposed toward a regional airport siting process if it were located at ___________ Km from where you live.

46. If a regional airport were located within the distance described in question number 45 what would you do? (Please cross all the answers if more than one).

Do nothing | Complaint with authorities | Move out of your house | Sell your house | Active participation in opposition groups

Section C, Cont.

47. If a regional airport were located in the vicinity, do you believe that your community has adequate road access infrastructure to host such facility?

○ Yes ○ No ○ Don't Know

48. If a regional airport were located in the vicinity, do you believe that your community has the adequate contingency equipment in case of an aircraft crash emergency?

○ Yes ○ No ○ Don't Know

49. For you, which are the most negative environmental impacts associated with hosting a municipal landfill in the vicinity of your community?

____

____

____

_____

50. For you, which are the most negative environmental impacts that a regional airport could generate if it were located near your community?

____

____

____

_____

51. For you, what are the potential benefits to your community of a municipal landfill located in the vicinity?

____

____

____

_____

52. For you, what are the potential benefits to your community of a regional airport located in the vicinity?

____

____

____

_____

Section C, Cont.

Personal Information (in case of further contact with the person surveyed)

Name: Ms. Mrs. Mr. ____________________

Address: ____________________ City/Town: __________

Postal Code: __________

SECTION D. In this section we would like you to give us some feedback about the survey.

Instructions: Please, in the following lines write all your comments, suggestions, questions and concerns related to this survey.

Remarks for Question No. 1

Chernobyl has been the single greatest nuclear disaster in history. In 1986 an explosion took place in one of the reactors when human error combined with faulty technical design led to the accident. As a result of the explosion of the failed reactor a huge amount of radioactive material was released into the atmosphere, killing 31 people at the site and affecting thousands more.

Love Canal was an abandoned project, in the State of New York, that consisted in connecting the upper and lower Niagara River by digging a canal six to seven miles long. The only dug section of the canal was sold to a chemical company and it was used as a dump for industrial, municipal and military waste. Between the 1950's and 1970's this waste disposal site was developed into a residential area, causing health problems to its inhabitants and a greater dispersion of contaminants in the area.

A waste reservoir at **Los Frailes** mine came apart in 1998, sending up to five million cubic meters of contaminated water rushing into the Guadiamar River near the southern city of Seville, in Spain.

In 1979 the first nuclear power plant accident took place in **Three Mile Island**, Pennsylvania. Reactor No.2 partially melt down, releasing radioactive coolant into the atmosphere. Although nobody was injured, this accident triggered widespread fear of nuclear energy among the public.

In **Bophal** India, a Union Carbide plant released a poisonous cloud of methyl isocyanate that killed 3,500 people and affected thousands more living within a radius of 5 to 8 miles. This accident took place in 1984.

APPENDIX B

SECTION B-2

SECTION B-2 OUTCOMES FROM THE THREE COMMUNITIES COMBINED

Overall Survey Frequencies

Table B-2.1.1 Statistics

	N	
	Received	Missing
Survey Participation	43	32

Table B-2.1.2 OVERALL SURVEY RESPONSES

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Barons	13	17.3	30.2	30.2
	Nobleford	14	18.7	32.6	62.8
	Picture Butte	16	21.3	37.2	100.0
	Total	43	57.3	100.0	
Missing	No Answer	32	42.7		
	Total	32	42.7		
Total		75	100.0		

General Frequencies From the Total Survey Responses

Table B-2.1.3 RESPONSES BY TOWN

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Barons	13	30.2	30.2	30.2
	Nobleford	14	32.6	32.6	62.8
	Picture Butte	16	37.2	37.2	100.0
	Total	43	100.0	100.0	
Total		43	100.0		

Table B-2.1.4 Question No. 01 (Q1): About The Worst Case of Environmental Disaster That Has Occured

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Chernobyl	22	51.2	56.4	56.4
	Love Canal	6	14.0	15.4	71.8
	Los Frailes	1	2.3	2.6	74.4
	Three Mile Island	1	2.3	2.6	76.9
	Bophal	9	20.9	23.1	100.0
	Total	39	90.7	100.0	
Missing	No Answer	4	9.3		
	Total	4	9.3		
Total		43	100.0		

Table B-2.1.5 Question No. 02 (Q2): If Technology Should Be Blame for All the Existing Environmental Deterioration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	4	9.3	9.3	9.3
	Neither I Agree nor Disagree	13	30.2	30.2	39.5
	Disagree	26	60.5	60.5	100.0
	Total	43	100.0	100.0	
Total		43	100.0		

Table B-2.1.6 Question No. 03 (Q3): If Technolgy Could Help to Remedy Environmental Deterioration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	38	88.4	88.4	88.4
	Neither I Agree nor Disagree	4	9.3	9.3	97.7
	Disagree	1	2.3	2.3	100.0
	Total	43	100.0	100.0	
Total		43	100.0		

Table B-2.1.7 Question No. 04 (Q4): If the Existing Methodologies Used for Solid Waste Disposal Are Effective

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	11	25.6	26.2	26.2
	Neither I Agree nor Disagree	19	44.2	45.2	71.4
	Disagree	12	27.9	28.6	100.0
	Total	42	97.7	100.0	
Missing	No Answer	1	2.3		
	Total	1	2.3		
Total		43	100.0		

Table B-2.1.8 Question No. 05 (Q5): If They Believe that the Quality of the Environment Has Decreased in Recent Times

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	19	44.2	45.2	45.2
	Neither I Agree nor Disagree	5	11.6	11.9	57.1
	Disagree	18	41.9	42.9	100.0
	Total	42	97.7	100.0	
Missing	No Answer	1	2.3		
	Total	1	2.3		
Total		43	100.0		

Table B-2.1.9 Question No. 06 (Q6): If the Present Environmental Conditions in the Community Are Unbearable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	3	7.0	7.1	7.1
	Neither I Agree nor Disagree	8	18.6	19.0	26.2
	Disagree	31	72.1	73.8	100.0
	Total	42	97.7	100.0	
Missing	No Answer	1	2.3		
	Total	1	2.3		
Total		43	100.0		

Table B-2.1.10 Question No. 07 (Q7): About the Condition of the Quality of the Environment in the Community with the Passing of Time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Better	12	27.9	27.9	27.9
	Neither Better Nor Worse	18	41.9	41.9	69.8
	Worse	13	30.2	30.2	100.0
	Total	43	100.0	100.0	
Total		43	100.0		

Table B-2.1.11 Question No. 08 (Q8): If They Were Very Concerned About the Global Quality of the Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	36	83.7	83.7	83.7
	Neither I Agree nor Disagree	7	16.3	16.3	100.0
	Total	43	100.0	100.0	
Total		43	100.0		

Table B-2.1.12 Question No. 09 (Q9): If They Were Very Concern About the Quality of the Environment in the Surrounding Area of Their Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	34	79.1	79.1	79.1
	Neither I Agree nor Disagree	6	14.0	14.0	93.0
	Disagree	3	7.0	7.0	100.0
	Total	43	100.0	100.0	
Total		43	100.0		

Table B-2.1.13 Question No. 10 (Q10): If They Believe That People Were Very Concerned About the Quality of the Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	25	58.1	59.5	59.5
	Neither I Agree nor Disagree	9	20.9	21.4	81.0
	Disagree	8	18.6	19.0	100.0
	Total	42	97.7	100.0	
Missing	No Answer	1	2.3		
	Total	1	2.3		
Total		43	100.0		

Table B-2.1.14 Question No. 11 (Q11): If in Their Community, People Would Participate Actively in Programs Designed to Improve the Quality of the Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	20	46.5	48.8	48.8
	Neither I Agree nor Disagree	14	32.6	34.1	82.9
	Disagree	7	16.3	17.1	100.0
	Total	41	95.3	100.0	
Missing	No Answer	2	4.7		
	Total	2	4.7		
Total		43	100.0		

Table B-2.1.15 Question No. 12 (Q12): If There Were Programs Specially Instated to Improve the Quality of the Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	20	46.5	50.0	50.0
	Neither I Agree nor Disagree	9	20.9	22.5	72.5
	Disagree	11	25.6	27.5	100.0
	Total	40	93.0	100.0	
Missing	No Answer	3	7.0		
	Total	3	7.0		
Total		43	100.0		

Table B-2.1.16 Question No. 13 (Q13): If a Rift Exist Between Factions of Their Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	22	51.2	59.5	59.5
	No	15	34.9	40.5	100.0
	Total	37	86.0	100.0	
Missing	No Answer	6	14.0		
	Total	6	14.0		
Total		43	100.0		

Table B-2.1.17 Question No. 14 (Q14): If There Is Any Rift Present Is It a Serious Situation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	8	18.6	21.1	21.1
	No	9	20.9	23.7	44.7
	Neither Serious nor Significant	13	30.2	34.2	78.9
	No Rift Present	8	18.6	21.1	100.0
	Total	38	88.4	100.0	
Missing	No Answer	5	11.6		
	Total	5	11.6		
Total		43	100.0		

Table B-2.1.18 Question No. 15 (Q15): About the Economic Growth of Their Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Decreased	2	4.7	4.7	4.7
	Decreased	13	30.2	30.2	34.9
	No Change	8	18.6	18.6	53.5
	Increased	20	46.5	46.5	100.0
	Total	43	100.0	100.0	
Total		43	100.0		

Table B-2.1.19 Question No. 16 (Q16): About the Unemployment Situation of the Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Decreased	1	2.3	2.4	2.4
	Decreased	16	37.2	38.1	40.5
	No Change	12	27.9	28.6	69.0
	Increased	13	30.2	31.0	100.0
	Total	42	97.7	100.0	
Missing	No Answer	1	2.3		
	Total	1	2.3		
Total		43	100.0		

Table B-2.1.20 Question No. 17 (Q17): About the Average Income Situation of the Community During the Past Five Years

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Decreased	1	2.3	2.6	2.6
	Decreased	4	9.3	10.3	12.8
	No Change	19	44.2	48.7	61.5
	Increased	15	34.9	38.5	100.0
	Total	39	90.7	100.0	
Missing	No Answer	4	9.3		
	Total	4	9.3		
Total		43	100.0		

Table B-2.1.21 Question No. 18 (Q18): About the Quality of Public Health Conditions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Decreased	2	4.7	4.8	4.8
	Decreased	6	14.0	14.3	19.0
	No Change	26	60.5	61.9	81.0
	Increased	8	18.6	19.0	100.0
	Total	42	97.7	100.0	
Missing	No Answer	1	2.3		
	Total	1	2.3		
Total		43	100.0		

Table B-2.1.22 Question No. 19 (Q19): About the Quality on the Standard of Living in the Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decreased	9	20.9	20.9	20.9
	No Change	18	41.9	41.9	62.8
	Increased	16	37.2	37.2	100.0
	Total	43	100.0	100.0	
Total		43	100.0		

Table B-2.1.23 Question No. 20 (Q20): About the Quality of Public Services in Their Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Decreased	2	4.7	4.7	4.7
	Decreased	11	25.6	25.6	30.2
	No Change	19	44.2	44.2	74.4
	Increased	11	25.6	25.6	100.0
	Total	43	100.0	100.0	
Total		43	100.0		

Table B-2.1.24 Question No. 21 (Q21): If the Present Public Health Conditions in Their Community Are Unbeareable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	6	14.0	14.6	14.6
	No	35	81.4	85.4	100.0
	Total	41	95.3	100.0	
Missing	No Answer	2	4.7		
	Total	2	4.7		
Total		43	100.0		

Table B-2.1.25 Question No. 22 (Q22): If There Has Been the Recent Loss of a Facility That Contributed To the Economical Status of the Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	14	32.6	32.6	32.6
	No	20	46.5	46.5	79.1
	Don't Know	9	20.9	20.9	100.0
	Total	43	100.0	100.0	
Total		43	100.0		

Table B-2.1.26 Question No. 23 (Q23): If There Is the Need to Improve the Economy of the Community Due to a Recent or Sudden Economic Loss

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	17	39.5	41.5	41.5
	No	15	34.9	36.6	78.0
	Don't Know	9	20.9	22.0	100.0
	Total	41	95.3	100.0	
Missing	No Answer	2	4.7		
	Total	2	4.7		
Total		43	100.0		

Table B-2.1.27 Question No. 24 (Q24): If The Cultural Characteristics of the Community Are at Risk of Being Lost

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	6	14.0	14.0	14.0
	No	37	86.0	86.0	100.0
	Total	43	100.0	100.0	
Total		43	100.0		

Table B-2.1.28 Question No. 25 (Q25): If They Consider that Their Community is Losing Political Weight with the Provincial Government

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	19	44.2	46.3	46.3
	No	22	51.2	53.7	100.0
	Total	41	95.3	100.0	
Missing	No Answer	2	4.7		
	Total	2	4.7		
Total		43	100.0		

Table B-2.1.29 Question No. 26 (Q26): If They Consider that Their Community is Losing Political Weight with the Federal Government

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	20	46.5	51.3	51.3
	No	19	44.2	48.7	100.0
	Total	39	90.7	100.0	
Missing	No Answer	4	9.3		
	Total	4	9.3		
Total		43	100.0		

Table B-2.1.30 Question No. 27 (Q27): If They Know of Any Past or Present Environmental Problem

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	21	48.8	53.8	53.8
	No	18	41.9	46.2	100.0
	Total	39	90.7	100.0	
Missing	No Answer	4	9.3		
	Total	4	9.3		
Total		43	100.0		

Table B-2.1.31 Question No. 28 (Q28): Respondent's Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20	1	2.3	2.3	2.3
	21	1	2.3	2.3	4.7
	23	1	2.3	2.3	7.0
	24	2	4.7	4.7	11.6
	27	1	2.3	2.3	14.0
	29	1	2.3	2.3	16.3
	31	1	2.3	2.3	18.6
	33	1	2.3	2.3	20.9
	34	1	2.3	2.3	23.3
	38	3	7.0	7.0	30.2
	40	1	2.3	2.3	32.6
	41	1	2.3	2.3	34.9
	42	2	4.7	4.7	39.5
	45	2	4.7	4.7	44.2
	46	2	4.7	4.7	48.8
	47	2	4.7	4.7	53.5
	50	1	2.3	2.3	55.8
	51	1	2.3	2.3	58.1
	54	3	7.0	7.0	65.1
	56	1	2.3	2.3	67.4
	57	2	4.7	4.7	72.1
	58	1	2.3	2.3	74.4
	59	1	2.3	2.3	76.7
	62	1	2.3	2.3	79.1
	63	1	2.3	2.3	81.4
	67	3	7.0	7.0	88.4
	72	1	2.3	2.3	90.7
	73	2	4.7	4.7	95.3
	79	1	2.3	2.3	97.7
	80	1	2.3	2.3	100.0
	Total	43	100.0	100.0	
Total		43	100.0		

Table B-2.1.32 Question No. 29 (Q29): Respondents Married

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	35	81.4	81.4	81.4
	No	8	18.6	18.6	100.0
	Total	43	100.0	100.0	
Total		43	100.0		

Table B-2.1.33 Question No. 30 (Q30): Respondents with Children

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	16	37.2	37.2	37.2
	No	27	62.8	62.8	100.0
	Total	43	100.0	100.0	
Total		43	100.0		

Table B-2.1.34 Question No. 31 (Q31): Opposition if a Municipal Landfill were Located at 1.6 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	11	25.6	25.6	25.6
	Opposed	18	41.9	41.9	67.4
	Neither Opposed nor Supportive	9	20.9	20.9	88.4
	Supportive	4	9.3	9.3	97.7
	Strongly Supportive	1	2.3	2.3	100.0
	Total	43	100.0	100.0	
Total		43	100.0		

Table B-2.1.35 Question No. 32 (Q32): Opposition if a Municipal Landfill were Located at 8 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	6	14.0	14.3	14.3
	Opposed	6	14.0	14.3	28.6
	Neither Opposed nor Supportive	13	30.2	31.0	59.5
	Supportive	16	37.2	38.1	97.6
	Strongly Supportive	1	2.3	2.4	100.0
	Total	42	97.7	100.0	
Missing	No Answer	1	2.3		
	Total	1	2.3		
Total		43	100.0		

Table B-2.1.36 Question No. 33 (Q33): Opposition if a Municipal Landfill were Located at 25 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	2	4.7	4.8	4.8
	Opposed	4	9.3	9.5	14.3
	Neither Opposed nor Supportive	16	37.2	38.1	52.4
	Supportive	17	39.5	40.5	92.9
	Strongly Supportive	3	7.0	7.1	100.0
	Total	42	97.7	100.0	
Missing	No Answer	1	2.3		
	Total	1	2.3		
Total		43	100.0		

Table B-2.1.37 Question No. 34 (Q34): Opposition if a Municipal Landfill were Located at 32 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	1	2.3	2.4	2.4
	Opposed	3	7.0	7.1	9.5
	Neither Opposed nor Supportive	15	34.9	35.7	45.2
	Supportive	15	34.9	35.7	81.0
	Strongly Supportive	8	18.6	19.0	100.0
	Total	42	97.7	100.0	
Missing	No Answer	1	2.3		
	Total	1	2.3		
Total		43	100.0		

Table B-2.1.38 Question No. 35 (Q35): People Supportive to the Landfill

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance less than or equal to 25 km	17	39.5	65.4	65.4
	Distance more than 25 km	9	20.9	34.6	100.0
	Total	26	60.5	100.0	
Missing	No Answer	17	39.5		
	Total	17	39.5		
Total		43	100.0		

Table B-2.1.39 Question No. 36 (Q36): People Opposed to the Landfill

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance less than or equal to 25 km	28	65.1	87.5	87.5
	Distance more than 25 km	4	9.3	12.5	100.0
	Total	32	74.4	100.0	
Missing	No Answer	11	25.6		
	Total	11	25.6		
Total		43	100.0		

Table B-2.1.40 Question No. 37 Section A (Q37A): People that Would Do Nothing If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Do nothing	2	4.7	100.0	100.0
	Total	2	4.7	100.0	
Missing	No Answer	41	95.3		
	Total	41	95.3		
Total		43	100.0		

Table B-2.1.41 Question No. 37 Section B (Q37B): People that Would Complaint with Authorities If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Complaint with authorities	17	39.5	100.0	100.0
	Total	17	39.5	100.0	
Missing	No Answer	26	60.5		
	Total	26	60.5		
Total		43	100.0		

Table B-2.1.42 Question No. 37 Section C (Q37C): People that Would Move Out of Their Houses If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Move out of house	2	4.7	100.0	100.0
	Total	2	4.7	100.0	
Missing	No Answer	41	95.3		
	Total	41	95.3		
Total		43	100.0		

Table B-2.1.43 Question No. 37 Section D (Q37D): People that Would Sell Their Houses If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sell your house	3	7.0	100.0	100.0
	Total	3	7.0	100.0	
Missing	No Answer	40	93.0		
	Total	40	93.0		
Total		43	100.0		

Table B-2.1.44 Question No. 37 Section E (Q37E): People that Would Participate Actively in Opposition Groups If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Active participation in opposition groups	17	39.5	100.0	100.0
	Total	17	39.5	100.0	
Missing	No Answer	26	60.5		
	Total	26	60.5		
Total		43	100.0		

Table B-2.1.45 Question No. 38 (Q38): If The Community Has Adequate Roads To Host a Municipal Landfill

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	9	20.9	22.0	22.0
	No	20	46.5	48.8	70.7
	Don't Know	12	27.9	29.3	100.0
	Total	41	95.3	100.0	
Missing	No Answer	2	4.7		
	Total	2	4.7		
Total		43	100.0		

Table B-2.1.46 Question No. 39 (Q39): If the Community Has the Adequate Contingency Equipment in Case of a Fire Emergency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	18	41.9	42.9	42.9
	No	20	46.5	47.6	90.5
	Don't Know	4	9.3	9.5	100.0
	Total	42	97.7	100.0	
Missing	No Answer	1	2.3		
	Total	1	2.3		
Total		43	100.0		

Table B-2.1.47 Question No.40 (Q40): Opposition if a Regional Airport were Located at 1.6 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	12	27.9	28.6	28.6
	Opposed	19	44.2	45.2	73.8
	Neither Opposed nor Supportive	7	16.3	16.7	90.5
	Supportive	3	7.0	7.1	97.6
	Strongly Supportive	1	2.3	2.4	100.0
	Total	42	97.7	100.0	
Missing	No Answer	1	2.3		
	Total	1	2.3		
Total		43	100.0		

Table B-2.1.48 Question No. 41 (Q41): Opposition if a Regional Airport were Located at 8 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	8	18.6	19.0	19.0
	Opposed	10	23.3	23.8	42.9
	Neither Opposed nor Supportive	10	23.3	23.8	66.7
	Supportive	12	27.9	28.6	95.2
	Strongly Supportive	2	4.7	4.8	100.0
	Total	42	97.7	100.0	
Missing	No Answer	1	2.3		
	Total	1	2.3		
Total		43	100.0		

Table B-2.1.49 Question No. 42 (Q42): Opposition if a Regional Airport were Located at 25 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	5	11.6	11.9	11.9
	Opposed	2	4.7	4.8	16.7
	Neither Opposed nor Supportive	15	34.9	35.7	52.4
	Supportive	17	39.5	40.5	92.9
	Strongly Supportive	3	7.0	7.1	100.0
	Total	42	97.7	100.0	
Missing	No Answer	1	2.3		
	Total	1	2.3		
Total		43	100.0		

Table B-2.1.50 Question No. 43 (Q43): Opposition if a Regional Airport were Located at 32 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	1	2.3	2.4	2.4
	Opposed	1	2.3	2.4	4.8
	Neither Opposed nor Supportive	12	27.9	28.6	33.3
	Supportive	24	55.8	57.1	90.5
	Strongly Supportive	4	9.3	9.5	100.0
	Total	42	97.7	100.0	
Missing	No Answer	1	2.3		
	Total	1	2.3		
Total		43	100.0		

Table B-2.1.51 Question No. 44 (Q44): People Supportive to the Airport

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance less than or equal to 25 km	22	51.2	78.6	78.6
	Distance more than 25 km	6	14.0	21.4	100.0
	Total	28	65.1	100.0	
Missing	No Answer	15	34.9		
	Total	15	34.9		
Total		43	100.0		

Table B-2.1.52 Question No. 45 (Q45): People Opposed to the Airport

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance less than or equal to 25 km	25	58.1	83.3	83.3
	Distance more than 25 km	5	11.6	16.7	100.0
	Total	30	69.8	100.0	
Missing	No Answer	13	30.2		
	Total	13	30.2		
Total		43	100.0		

Table B-2.1.53 Question No. 46 Section A (Q46A): People that Would Do Nothing If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Do nothing	7	16.3	100.0	100.0
	Total	7	16.3	100.0	
Missing	No Answer	36	83.7		
	Total	36	83.7		
Total		43	100.0		

Table B-2.1.54 Question No. 46 Section B (Q46B): People that Would Complaint with Authorities If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Complaint with authorities	15	34.9	100.0	100.0
	Total	15	34.9	100.0	
Missing	No Answer	28	65.1		
	Total	28	65.1		
Total		43	100.0		

Table B-2.1.55 Question No. 46 Section C (Q46C): People that Would Move Out of Their Houses If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Move out of house	1	2.3	100.0	100.0
	Total	1	2.3	100.0	
Missing	No Answer	42	97.7		
	Total	42	97.7		
Total		43	100.0		

Table B-2.1.56 Question No. 46 Section D (Q46D): People that Would Sell Their Houses If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sell your house	3	7.0	100.0	100.0
	Total	3	7.0	100.0	
Missing	No Answer	40	93.0		
	Total	40	93.0		
Total		43	100.0		

Table B-2.1.57 Question No. 46 Section E (Q46E): People that Would Participate Actively in Opposition Groups If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Active participation in opposition groups	20	46.5	100.0	100.0
	Total	20	46.5	100.0	
Missing	No Answer	23	53.5		
	Total	23	53.5		
Total		43	100.0		

Table B-2.1.58 Question No. 47 (Q47): If The Community Has Adequate Roads To Host a Regional Airport

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	8	18.6	19.5	19.5
	No	24	55.8	58.5	78.0
	Don't Know	9	20.9	22.0	100.0
	Total	41	95.3	100.0	
Missing	No Answer	2	4.7		
	Total	2	4.7		
Total		43	100.0		

Table B-2.1.59 Question No. 48 (Q48): If The Community Has the Adequate Contingency Equipment in Case of an Aircraft Emergency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	5	11.6	12.2	12.2
	No	34	79.1	82.9	95.1
	Don't Know	2	4.7	4.9	100.0
	Total	41	95.3	100.0	
Missing	No Answer	2	4.7		
	Total	2	4.7		
Total		43	100.0		

Table B-2.1.60 Question No. 53 (Q53): Gender of the Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	11	25.6	36.7	36.7
	Female	19	44.2	63.3	100.0
	Total	30	69.8	100.0	
Missing	No Answer	13	30.2		
	Total	13	30.2		
Total		43	100.0		

B-2.1.61 Statistics

	N	
	Valid	Missing
TOWN	43	0
Q1	39	4
Q2	43	0
Q3	43	0
Q4	42	1
Q5	42	1
Q6	42	1
Q7	43	0
Q8	43	0
Q9	43	0
Q10	42	1
Q11	41	2
Q12	40	3
Q13	37	6
Q14	38	5
Q15	43	0
Q16	42	1
Q17	39	4
Q18	42	1
Q19	43	0
Q20	43	0
Q21	41	2
Q22	43	0
Q23	41	2
Q24	43	0
Q25	41	2
Q26	39	4
Q27	39	4
Q28	43	0
Q29	43	0
Q30	43	0
Q31	43	0
Q32	42	1
Q33	42	1
Q34	42	1
Supportive	26	17
Opposed	32	11
Q37A	2	41
Q37B	17	26
Q37C	2	41
Q37D	3	40
Q37E	17	26
Q38	41	2
Q39	42	1
Q40	42	1
Q41	42	1
Q42	42	1
Q43	42	1
Supportive	28	15
Opposed	30	13
Q46A	7	36
Q46B	15	28
Q46C	1	42
Q46D	3	40
Q46E	20	23
Q47	41	2
Q48	41	2
Q53	30	13

SECTION 2-B Frequencies from the Village of Barons

Table B-2. 2.1 Question No. 01 (Q1): About The Worst Case of Environmental Disaster That Has Occured

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Chernobyl	5	38.5	41.7	41.7
	Love Canal	3	23.1	25.0	66.7
	Los Frailes	1	7.7	8.3	75.0
	Three Mile Island	1	7.7	8.3	83.3
	Bophal	2	15.4	16.7	100.0
	Total	12	92.3	100.0	
Missing	No Answer	1	7.7		
	Total	1	7.7		
Total		13	100.0		

Table B-2.2.2 Question No. 02 (Q2): If Technology Should Be Blame for All the Existing Environmental Deterioration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	3	23.1	23.1	23.1
	Neither I Agree nor Disagree	3	23.1	23.1	46.2
	Disagree	7	53.8	53.8	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.3 Question No. 03 (Q3): If Technolgy Could Help to Remedy Environmental Deterioration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	11	84.6	84.6	84.6
	Neither Agree nor disagree	1	7.7	7.7	92.3
	Disagree	1	7.7	7.7	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.4 Question No. 04 (Q4): If the Existing Methodologies Used for Salid Waste Disposal Are Effective

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	4	30.8	30.8	30.8
	Neither I Agree nor Disagree	5	38.5	38.5	69.2
	Disagree	4	30.8	30.8	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.5 Question No. 05 (Q5): If They Believe that the Quality of the Environment Has Decreased in Recent Times

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	6	46.2	46.2	46.2
	Neither I Agree nor Disagree	1	7.7	7.7	53.8
	Disagree	6	46.2	46.2	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.6 Question No. 06 (Q6): If the Present Environmental Conditions In the Community Are Unbearable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	1	7.7	7.7	7.7
	Neither I Agree nor Disagree	1	7.7	7.7	15.4
	Disagree	11	84.6	84.6	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.7 Question No. 07 (Q7): About the Condition of the Quality of the Environment in the Community with the Passing of Time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Better	2	15.4	15.4	15.4
	Neither Better nor Worse	7	53.8	53.8	69.2
	Worse	4	30.8	30.8	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.8 Question No. 08 (Q8): If They Were Very Concerned About the Global Quality of the Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	11	84.6	84.6	84.6
	Neither I Agree nor Disagree	2	15.4	15.4	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.9 Question No. 09 (Q9): If They Were Very Concern About the Quality of the Environment in the Surrounding Area of Their Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	10	76.9	76.9	76.9
	Neither I Agree nor Disagree	3	23.1	23.1	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.10 Question No. 10 (Q10): If They Believe That People Were Very Concerned About the Quality of the Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	6	46.2	46.2	46.2
	Neither I Agree nor Disagree	2	15.4	15.4	61.5
	Disagree	5	38.5	38.5	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.11 Question No. 11 (Q11): If in Their Community, People Would Participate Actively in Programs Designed to Improve the Quality of the Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	6	46.2	46.2	46.2
	Neither I Agree nor Disagree	3	23.1	23.1	69.2
	Disagree	4	30.8	30.8	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.12 Question No. 12 (Q12): If There Were Programs Specially Instated to Improve the Quality of the Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	5	38.5	41.7	41.7
	Neither I Agree nor Disagree	2	15.4	16.7	58.3
	Disagree	5	38.5	41.7	100.0
	Total	12	92.3	100.0	
Missing	No Answer	1	7.7		
	Total	1	7.7		
Total		13	100.0		

Table B-2.2.13 Question No. 13 (Q13): If a Rift Exist Between Factions of Their Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	5	38.5	45.5	45.5
	No	6	46.2	54.5	100.0
	Total	11	84.6	100.0	
Missing	No Answer	2	15.4		
	Total	2	15.4		
Total		13	100.0		

Table B-2.2.14 Question No. 14 (Q14): If There Is Any Rift Present Is It a Serious Situation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	3	23.1	25.0	25.0
	No	2	15.4	16.7	41.7
	Neither Serious nor Significant	1	7.7	8.3	50.0
	No Rift Present	6	46.2	50.0	100.0
	Total	12	92.3	100.0	
Missing	System Missing	1	7.7		
	Total	1	7.7		
Total		13	100.0		

Table B-2.2.15 Question No. 15 (Q15): About the Economic Growth of Their Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Decreased	2	15.4	15.4	15.4
	Decreased	7	53.8	53.8	69.2
	No Change	3	23.1	23.1	92.3
	Increased	1	7.7	7.7	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.16 Question No. 16 (Q16): About the Unemployment Situation of the Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decreased	5	38.5	38.5	38.5
	No Change	6	46.2	46.2	84.6
	Increased	2	15.4	15.4	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.17 Question No. 17 (Q17): About the Average Income Situation of the Community During the Past Five Years

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decreased	2	15.4	16.7	16.7
	No Change	6	46.2	50.0	66.7
	Increased	4	30.8	33.3	100.0
	Total	12	92.3	100.0	
Missing	No Answer	1	7.7		
	Total	1	7.7		
Total		13	100.0		

Table B-2.2.18 Question No. 18 (Q18): About the Quality of Public Health Conditions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decreased	2	15.4	16.7	16.7
	No Change	10	76.9	83.3	100.0
	Total	12	92.3	100.0	
Missing	No Answer	1	7.7		
	Total	1	7.7		
Total		13	100.0		

Table B-2.2.19 Question No. 19 (Q19): About the Quality on the Standard of Living in the Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decreased	5	38.5	38.5	38.5
	No Change	6	46.2	46.2	84.6
	Increased	2	15.4	15.4	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.20 Question No. 20 (Q20): About the Quality of Public Services in Their Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decreased	4	30.8	30.8	30.8
	No Change	8	61.5	61.5	92.3
	Increased	1	7.7	7.7	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.21 Question No. 21 (Q21): If the Present Public Health Conditions in Their Community Are Unbeareable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	1	7.7	8.3	8.3
	No	11	84.6	91.7	100.0
	Total	12	92.3	100.0	
Missing	No Answer	1	7.7		
	Total	1	7.7		
Total		13	100.0		

Table B-2.2.22 Question No. 22 (Q22): If There Has Been the Recent Loss of a Facility That Contributed To the Economical Status of the Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	8	61.5	61.5	61.5
	No	5	38.5	38.5	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.23 Question No. 23 (Q23): If There Is the Need to Improve the Economy of the Community Due to a Recent or Sudden Economic Loss

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	9	69.2	69.2	69.2
	No	3	23.1	23.1	92.3
	Don't Know	1	7.7	7.7	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.24 Question No. 24 (Q24): If The Cultural Characteristics of the Community Are at Risk of Being Lost

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	30.8	30.8	30.8
	No	9	69.2	69.2	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.25 Question No. 25 (Q25): If They Consider that Their Community is Losing Political Weight with the Provincial Government

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	8	61.5	61.5	61.5
	No	5	38.5	38.5	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.26 Question No. 26 (Q26): If They Consider that Their Community is Losing Political Weight with the Federal Government

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	7	53.8	53.8	53.8
	No	6	46.2	46.2	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.27 Question No. 27 (Q27): If They Know of Any Past or Present Environmental Problem

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	3	23.1	27.3	27.3
	No	8	61.5	72.7	100.0
	Total	11	84.6	100.0	
Missing	System Missing	2	15.4		
	Total	2	15.4		
Total		13	100.0		

Table B-2.2.28 Question No. 28 (Q28): Respondent Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21	1	7.7	7.7	7.7
	24	1	7.7	7.7	15.4
	29	1	7.7	7.7	23.1
	38	1	7.7	7.7	30.8
	46	2	15.4	15.4	46.2
	54	1	7.7	7.7	53.8
	58	1	7.7	7.7	61.5
	59	1	7.7	7.7	69.2
	62	1	7.7	7.7	76.9
	67	1	7.7	7.7	84.6
	73	1	7.7	7.7	92.3
	80	1	7.7	7.7	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.29 Question No. 29 (Q29): Respondents Married

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	10	76.9	76.9	76.9
	No	3	23.1	23.1	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.30 Question No. 30 (Q30): Respondents with Children

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	30.8	30.8	30.8
	No	9	69.2	69.2	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.31 Question No. 31 (Q31): Opposition if a Municipal Landfill were Located at 1.6 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	3	23.1	23.1	23.1
	Opposed	4	30.8	30.8	53.8
	Neither Opposed nor Supportive	3	23.1	23.1	76.9
	Supportive	2	15.4	15.4	92.3
	Strongly Supportive	1	7.7	7.7	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.32 Question No. 32 (Q32): Opposition if a Municipal Landfill were Located at 8 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	3	23.1	25.0	25.0
	Opposed	1	7.7	8.3	33.3
	Neither Opposed nor Supportive	2	15.4	16.7	50.0
	Supportive	5	38.5	41.7	91.7
	Strongly Supportive	1	7.7	8.3	100.0
	Total	12	92.3	100.0	
Missing	No Answer	1	7.7		
	Total	1	7.7		
Total		13	100.0		

Table B-2.2.33 Question No. 33 (Q33): Opposition if a Municipal Landfill were Located at 25 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	1	7.7	8.3	8.3
	Opposed	2	15.4	16.7	25.0
	Neither Opposed nor Supportive	3	23.1	25.0	50.0
	Supportive	4	30.8	33.3	83.3
	Strongly Supportive	2	15.4	16.7	100.0
	Total	12	92.3	100.0	
Missing	No Answer	1	7.7		
	Total	1	7.7		
Total		13	100.0		

Table B-2.2.34 Question No. 34 (Q34): Opposition if a Municipal Landfill were Located at 32 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	1	7.7	8.3	8.3
	Opposed	2	15.4	16.7	25.0
	Neither Opposed nor Supportive	3	23.1	25.0	50.0
	Supportive	3	23.1	25.0	75.0
	Strongly Supportive	3	23.1	25.0	100.0
	Total	12	92.3	100.0	
Missing	No Answer	1	7.7		
	Total	1	7.7		
Total		13	100.0		

Table B-2.2.35 Question No. 35 (Q35): People Supportive to the Landfill

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance less than or equal to 25 km	2	15.4	40.0	40.0
	Distance more than 25 km	3	23.1	60.0	100.0
	Total	5	38.5	100.0	
Missing	No Answer	8	61.5		
	Total	8	61.5		
Total		13	100.0		

Table B-2.2.36 Question No. 36 (Q36): People Opposed to the Landfill

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance less than or equal to 25 km	9	69.2	90.0	90.0
	Distance more than 25 km	1	7.7	10.0	100.0
	Total	10	76.9	100.0	
Missing	No Answer	3	23.1		
	Total	3	23.1		
Total		13	100.0		

Table B-2.2.37 Question No. 37 Section A (Q37A): People that Would Do Nothing If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Do nothing	1	7.7	100.0	100.0
	Total	1	7.7	100.0	
Missing	No Answer	12	92.3		
	Total	12	92.3		
Total		13	100.0		

Table B-2.2.38 Question No. 37 Section B (Q37B): People that Would Complaint with Authorities If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Complaint with authorities	3	23.1	100.0	100.0
	Total	3	23.1	100.0	
Missing	No Answer	10	76.9		
	Total	10	76.9		
Total		13	100.0		

Table B-2.2.39 Question No. 37 Section C (Q37C): People that Would Move Out of Their Houses If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent
Missing	No Answer	13	100.0
	Total	13	100.0
Total		13	100.0

Table B-2.2.40 Question No. 37 Section D (Q37D): People that Would Sell Their Houses If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent
Missing	No Answer	13	100.0
	Total	13	100.0
Total		13	100.0

Table B-2.2.41 Question No. 37 Section E (Q37E): People that Would Participate Actively in Opposition Groups If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Active participation in opposition groups	4	30.8	100.0	100.0
	Total	4	30.8	100.0	
Missing	No Answer	9	69.2		
	Total	9	69.2		
Total		13	100.0		

Table B-2.2.42 Question No. 38 (Q38): If The Community Has Adequate Roads To Host a Municipal Landfill

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	2	15.4	16.7	16.7
	No	6	46.2	50.0	66.7
	Don't Know	4	30.8	33.3	100.0
	Total	12	92.3	100.0	
Missing	No Answer	1	7.7		
	Total	1	7.7		
Total		13	100.0		

Table B-2.2.43 Question No. 39 (Q39): If the Community Has the Adequate Contingency Equipment in Case of a Fire Emergency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	30.8	33.3	33.3
	No	7	53.8	58.3	91.7
	Don't Know	1	7.7	8.3	100.0
	Total	12	92.3	100.0	
Missing	No Answer	1	7.7		
	Total	1	7.7		
Total		13	100.0		

Table B-2.2.44 Question No.40 (Q40): Opposition if a Regional Airport were Located at 1.6 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	5	38.5	38.5	38.5
	Opposed	3	23.1	23.1	61.5
	Neither Opposed nor Supportive	4	30.8	30.8	92.3
	Strongly Supportive	1	7.7	7.7	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.45 Question No. 41 (Q41): Opposition if a Regional Airport were Located at 8 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	3	23.1	23.1	23.1
	Opposed	3	23.1	23.1	46.2
	Neither Opposed nor Supportive	2	15.4	15.4	61.5
	Supportive	4	30.8	30.8	92.3
	Strongly Supportive	1	7.7	7.7	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.46 Question No. 42 (Q42): Opposition if a Regional Airport were Located at 25 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	2	15.4	15.4	15.4
	Opposed	1	7.7	7.7	23.1
	Neither Opposed nor Supportive	4	30.8	30.8	53.8
	Supportive	5	38.5	38.5	92.3
	Strongly Supportive	1	7.7	7.7	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.47 Question No. 43 (Q43): Opposition if a Regional Airport were Located at 32 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	1	7.7	7.7	7.7
	Neither Opposed nor Supportive	3	23.1	23.1	30.8
	Supportive	7	53.8	53.8	84.6
	Strongly Supportive	2	15.4	15.4	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.48 Question No. 44 (Q44): People Supportive to the Airport

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance less than or equal to 25 km	8	61.5	88.9	88.9
	Distance more than 25 km	1	7.7	11.1	100.0
	Total	9	69.2	100.0	
Missing	No Answer	4	30.8		
	Total	4	30.8		
Total		13	100.0		

Table B-2.2.49 Question No. 45 (Q45): People Opposed to the Airport

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance less than or equal to 25 km	5	38.5	55.6	55.6
	Distance more than 25 km	4	30.8	44.4	100.0
	Total	9	69.2	100.0	
Missing	No Answer	4	30.8		
	Total	4	30.8		
Total		13	100.0		

Table B-2.2.50 Question No. 46 Section A (Q46A): People that Would Do Nothing If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Do nothing	3	23.1	100.0	100.0
	Total	3	23.1	100.0	
Missing	No Answer	10	76.9		
	Total	10	76.9		
Total		13	100.0		

Table B-2.2.51 Question No. 46 Section B (Q46B): People that Would Complaint with Authorities If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Complaint with authorities	4	30.8	100.0	100.0
	Total	4	30.8	100.0	
Missing	No Answer	9	69.2		
	Total	9	69.2		
Total		13	100.0		

Table B-2.2.52 Question No. 46 Section C (Q46C): People that Would Move Out of Their Houses If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent
Missing	No Answer	13	100.0
	Total	13	100.0
Total		13	100.0

Table B-2.2.53 Question No. 46 Section D (Q46D): People that Would Sell Their Houses If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent
Missing	No Answer	13	100.0
	Total	13	100.0
Total		13	100.0

Table B-2.2.54 Question No. 46 Section E (Q46E): People that Would Participate Actively in Opposition Groups If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Active participation in opposition groups	6	46.2	100.0	100.0
	Total	6	46.2	100.0	
Missing	No Answer	7	53.8		
	Total	7	53.8		
Total		13	100.0		

Table B-2.2.55 Question No. 47 (Q47): If The Community Has Adequate Roads To Host a Regional Airport

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	30.8	30.8	30.8
	No	7	53.8	53.8	84.6
	Don't Know	2	15.4	15.4	100.0
	Total	13	100.0	100.0	
Total		13	100.0		

Table B-2.2.56 Question No. 48 (Q48): If The Community Has the Adequate Contingency Equipment in Case of an Aircraft Emergency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	12	92.3	100.0	100.0
	Total	12	92.3	100.0	
Missing	No Answer	1	7.7		
	Total	1	7.7		
Total		13	100.0		

Table B-2.2.57 Question No. 53 (Q53): Gender of the Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	4	30.8	44.4	44.4
	Female	7	38.5	55.6	100.0
	Total	11	69.2	100.0	
Missing	No Answer	5	30.8		
	Total	5	30.8		
Total		16	100.0		

SECTION B-2 Frequencies from the Village of Nobleford

Table B-2.3.1 Question No. 01 (Q1): About The Worst Case of Environmental Disaster That Has Occured

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Chernobyl	9	56.3	75.0	75.0
	Love Canal	2	12.5	16.7	91.7
	Bophal	1	6.3	8.3	100.0
	Total	12	75.0	100.0	
Missing	No Answer	4	25.0		
	Total	4	25.0		
Total		16	100.0		

Table B-2.3.2 Question No. 02 (Q2): If Technology Should Be Blame for All the Existing Environmental Deterioration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	1	6.3	7.1	7.1
	Neither I Agree nor Disagree	4	25.0	28.6	35.7
	Disagree	9	56.3	64.3	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.3 Question No. 03 (Q3): If Technolgy Could Help to Remedy Environmental Deterioration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	13	81.3	92.9	92.9
	Neither Agree nor disagree	1	6.3	7.1	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.4 Question No. 04 (Q4): If the Existing Methodologies Used for Salid Waste Disposal Are Effective

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	3	18.8	23.1	23.1
	Neither I Agree nor Disagree	6	37.5	46.2	69.2
	Disagree	4	25.0	30.8	100.0
	Total	13	81.3	100.0	
Missing	No Answer	3	18.8		
	Total	3	18.8		
Total		16	100.0		

Table B-2.3.5 Question No. 05 (Q5): If They Believe that the Quality of the Environment Has Decreased in Recent Times

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	6	37.5	46.2	46.2
	Neither I Agree nor Disagree	3	18.8	23.1	69.2
	Disagree	4	25.0	30.8	100.0
	Total	13	81.3	100.0	
Missing	No Answer	3	18.8		
	Total	3	18.8		
Total		16	100.0		

Table B-2.3.6 Question No. 06 (Q6): If the Present Environmental Conditions In the Community Are Unbearable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	1	6.3	7.7	7.7
	Neither I Agree nor Disagree	1	6.3	7.7	15.4
	Disagree	11	68.8	84.6	100.0
	Total	13	81.3	100.0	
Missing	No Answer	3	18.8		
	Total	3	18.8		
Total		16	100.0		

Table B-2.3.7 Question No. 07 (Q7): About the Condition of the Quality of the Environment in the Community with the Passing of Time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Better	3	18.8	21.4	21.4
	Neither Better Nor Worse	5	31.3	35.7	57.1
	Worse	6	37.5	42.9	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.8 Question No. 08 (Q8): If They Were Very Concerned About the Global Quality of the Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	12	75.0	85.7	85.7
	Neither I Agree nor Disagree	2	12.5	14.3	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.9 Question No. 09 (Q9): If They Were Very Concern About the Quality of the Environment in the Surrounding Area of Their Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	12	75.0	85.7	85.7
	Neither I Agree nor Disagree	1	6.3	7.1	92.9
	Disagree	1	6.3	7.1	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.10 Question No. 10 (Q10): If They Believe That People Were Very Concerned About the Quality of the Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	6	37.5	46.2	46.2
	Neither I Agree nor Disagree	5	31.3	38.5	84.6
	Disagree	2	12.5	15.4	100.0
	Total	13	81.3	100.0	
Missing	No Answer	3	18.8		
	Total	3	18.8		
Total		16	100.0		

Table B-2.3.11 Question No. 11 (Q11): If in Their Community, People Would Participate Actively in Programs Designed to Improve the Quality of the Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	5	31.3	38.5	38.5
	Neither I Agree nor Disagree	5	31.3	38.5	76.9
	Disagree	3	18.8	23.1	100.0
	Total	13	81.3	100.0	
Missing	No Answer	3	18.8		
	Total	3	18.8		
Total		16	100.0		

Table B-2.3.12 Question No. 12 (Q12): If There Were Programs Specially Instated to Improve the Quality of the Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	6	37.5	46.2	46.2
	Neither I Agree nor Disagree	4	25.0	30.8	76.9
	Disagree	3	18.8	23.1	100.0
	Total	13	81.3	100.0	
Missing	No Answer	3	18.8		
	Total	3	18.8		
Total		16	100.0		

Table B-2.3.13 Question No. 13 (Q13): If a Rift Exist Between Factions of Their Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	5	31.3	45.5	45.5
	No	6	37.5	54.5	100.0
	Total	11	68.8	100.0	
Missing	No Answer	5	31.3		
	Total	5	31.3		
Total		16	100.0		

Table B-2.3.14 Question No. 14 (Q14): If There Is Any Rift Present Is It a Serious Situation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	1	6.3	9.1	9.1
	No	4	25.0	36.4	45.5
	Neither Serious nor Significant	4	25.0	36.4	81.8
	No Rift Present	2	12.5	18.2	100.0
	Total	11	68.8	100.0	
Missing	No Answer	5	31.3		
	Total	5	31.3		
Total		16	100.0		

Table B-2.3.15 Question No. 15 (Q15): About the Economic Growth of Their Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decreased	4	25.0	28.6	28.6
	No Change	2	12.5	14.3	42.9
	Increased	8	50.0	57.1	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.16 Question No. 16 (Q16): About the Unemployment Situation of the Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Decreased	1	6.3	7.7	7.7
	Decreased	4	25.0	30.8	38.5
	No Change	2	12.5	15.4	53.8
	Increased	6	37.5	46.2	100.0
	Total	13	81.3	100.0	
Missing	No Answer	3	18.8		
	Total	3	18.8		
Total		16	100.0		

Table B-2.3.17 Question No. 17 (Q17): About the Average Income Situation of the Community During the Past Five Years

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Decreased	1	6.3	8.3	8.3
	Decreased	2	12.5	16.7	25.0
	No Change	5	31.3	41.7	66.7
	Increased	4	25.0	33.3	100.0
	Total	12	75.0	100.0	
Missing	No Answer	4	25.0		
	Total	4	25.0		
Total		16	100.0		

Table B-2.3.18 Question No. 18 (Q18): About the Quality of Public Health Conditions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Decreased	1	6.3	7.1	7.1
	Decreased	1	6.3	7.1	14.3
	No Change	9	56.3	64.3	78.6
	Increased	3	18.8	21.4	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.19 Question No. 19 (Q19): About the Quality on the Standard of Living in the Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decreased	3	18.8	21.4	21.4
	No Change	5	31.3	35.7	57.1
	Increased	6	37.5	42.9	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.20 Question No. 20 (Q20): About the Quality of Public Services in Their Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Decreased	2	12.5	14.3	14.3
	Decreased	2	12.5	14.3	28.6
	No Change	8	50.0	57.1	85.7
	Increased	2	12.5	14.3	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.21 Question No. 21 (Q21): If the Present Public Health Conditions in Their Community Are Unbeareable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	2	12.5	15.4	15.4
	No	11	68.8	84.6	100.0
	Total	13	81.3	100.0	
Missing	No Answer	3	18.8		
	Total	3	18.8		
Total		16	100.0		

Table B-2.3.22 Question No. 22 (Q22): If There Has Been the Recent Loss of a Facility That Contributed To the Economical Status of the Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	5	31.3	35.7	35.7
	No	6	37.5	42.9	78.6
	Don't Know	3	18.8	21.4	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.23 Question No. 23 (Q23): If There Is the Need to Improve the Economy of the Community Due to a Recent or Sudden Economic Loss

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	5	31.3	41.7	41.7
	No	5	31.3	41.7	83.3
	Don't Know	2	12.5	16.7	100.0
	Total	12	75.0	100.0	
Missing	No Answer	4	25.0		
	Total	4	25.0		
Total		16	100.0		

Table B-2.3.24 Question No. 24 (Q24): If The Cultural Characteristics of the Community Are at Risk of Being Lost

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	1	6.3	7.1	7.1
	No	13	81.3	92.9	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.25 Question No. 25 (Q25): If They Consider that Their Community is Losing Political Weight with the Provincial Government

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	25.0	33.3	33.3
	No	8	50.0	66.7	100.0
	Total	12	75.0	100.0	
Missing	No Answer	4	25.0		
	Total	4	25.0		
Total		16	100.0		

Table B-2.3.26 Question No. 26 (Q26): If They Consider that Their Community Is Losing Political Weight with the Federal Government

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	8	50.0	66.7	66.7
	No	4	25.0	33.3	100.0
	Total	12	75.0	100.0	
Missing	No Answer	4	25.0		
	Total	4	25.0		
Total		16	100.0		

Table B-2.3.27 Question No. 27 (Q27): If They Know of Any Past or Present Environmental Problem

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	6	37.5	50.0	50.0
	No	6	37.5	50.0	100.0
	Total	12	75.0	100.0	
Missing	No Answer	4	25.0		
	Total	4	25.0		
Total		16	100.0		

Table B-2.3.28 Question No. 28 (Q28): Respondent's Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	33	1	6.3	7.1	7.1
	34	1	6.3	7.1	14.3
	38	2	12.5	14.3	28.6
	40	1	6.3	7.1	35.7
	42	2	12.5	14.3	50.0
	45	1	6.3	7.1	57.1
	54	1	6.3	7.1	64.3
	56	1	6.3	7.1	71.4
	67	1	6.3	7.1	78.6
	72	1	6.3	7.1	85.7
	73	1	6.3	7.1	92.9
	79	1	6.3	7.1	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.29 Question No. 29 (Q29): Respondents Married

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	12	75.0	85.7	85.7
	No	2	12.5	14.3	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.30 Question No. 30 (Q30): Respondents with Children

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	6	37.5	42.9	42.9
	No	8	50.0	57.1	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.31 Question No. 31 (Q31): Opposition if a Municipal Landfill were Located at 1.6 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	5	31.3	35.7	35.7
	Opposed	6	37.5	42.9	78.6
	Neither Opposed nor Supportive	2	12.5	14.3	92.9
	Supportive	1	6.3	7.1	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.32 Question No. 32 (Q32): Opposition if a Municipal Landfill were Located at 8 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	2	12.5	14.3	14.3
	Opposed	3	18.8	21.4	35.7
	Neither Opposed nor Supportive	5	31.3	35.7	71.4
	Supportive	4	25.0	28.6	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.33 Question No. 33 (Q33): Opposition if a Municipal Landfill were Located at 25 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	1	6.3	7.1	7.1
	Neither Opposed nor Supportive	7	43.8	50.0	57.1
	Supportive	6	37.5	42.9	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.34 Question No. 34 (Q34): Opposition if a Municipal Landfill were Located at 32 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neither Opposed nor Supportive	6	37.5	42.9	42.9
	Supportive	6	37.5	42.9	85.7
	Strongly Supportive	2	12.5	14.3	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.35 Question No. 35 (Q35): People Supportive to the Landfill

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance less than or equal to 25 km	7	43.8	70.0	70.0
	Distance more than 25 km	3	18.8	30.0	100.0
	Total	10	62.5	100.0	
Missing	No Answer	6	37.5		
	Total	6	37.5		
Total		16	100.0		

Table B-2.3.36 Question No. 36 (Q36): People Opposed to the Landfill

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance less than or equal to 25 km	9	56.3	90.0	90.0
	Distance more than 25 km	1	6.3	10.0	100.0
	Total	10	62.5	100.0	
Missing	No Answer	6	37.5		
	Total	6	37.5		
Total		16	100.0		

Table B-2.3.37 Question No. 37 Section A (Q37A): People that Would Do Nothing If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent
Missing	No Answer	16	100.0
	Total	16	100.0
Total		16	100.0

Table B-2.3.38 Question No. 37 Section B (Q37B): People that Would Complaint with Authorities If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Complaint with authorities	8	50.0	100.0	100.0
	Total	8	50.0	100.0	
Missing	No Answer	8	50.0		
	Total	8	50.0		
Total		16	100.0		

Table B-2.3.39 Question No. 37 Section C (Q37C): People that Would Move Out of Their Houses If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Move out of house	1	6.3	100.0	100.0
	Total	1	6.3	100.0	
Missing	No Answer	15	93.8		
	Total	15	93.8		
Total		16	100.0		

Table B-2.3.40 Question No. 37 Section D (Q37D): People that Would Sell Their Houses If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sell your house	2	12.5	100.0	100.0
	Total	2	12.5	100.0	
Missing	No Answer	14	87.5		
	Total	14	87.5		
Total		16	100.0		

Table B-2.3.41 Question No. 37 Section E (Q37E): People that Would Participate Actively in Opposition Groups If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Active participation in opposition groups	6	37.5	100.0	100.0
	Total	6	37.5	100.0	
Missing	No Answer	10	62.5		
	Total	10	62.5		
Total		16	100.0		

Table B-2.3.42 Question No. 38 (Q38): If The Community Has Adequate Roads To Host a Municipal Landfill

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	2	12.5	15.4	15.4
	No	9	56.3	69.2	84.6
	Don't Know	2	12.5	15.4	100.0
	Total	13	81.3	100.0	
Missing	No Answer	3	18.8		
	Total	3	18.8		
Total		16	100.0		

Table B-2.3.43 Question No. 39 (Q39): If the Community Has the Adequate Contingency Equipment in Case of a Fire Emergency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	7	43.8	50.0	50.0
	No	6	37.5	42.9	92.9
	Don't Know	1	6.3	7.1	100.0
	Total	14	87.5	100.0	
Missing	No Answer	2	12.5		
	Total	2	12.5		
Total		16	100.0		

Table B-2.3.44 Question No.40 (Q40): Opposition if a Regional Airport were Located at 1.6 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	5	31.3	38.5	38.5
	Opposed	7	43.8	53.8	92.3
	Supportive	1	6.3	7.7	100.0
	Total	13	81.3	100.0	
Missing	No Answer	3	18.8		
	Total	3	18.8		
Total		16	100.0		

Table B-2.3.45 Question No. 41 (Q41): Opposition if a Regional Airport were Located at 8 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	4	25.0	30.8	30.8
	Opposed	3	18.8	23.1	53.8
	Neither Opposed nor Supportive	4	25.0	30.8	84.6
	Supportive	1	6.3	7.7	92.3
	Strongly Supportive	1	6.3	7.7	100.0
	Total	13	81.3	100.0	
Missing	No Answer	3	18.8		
	Total	3	18.8		
Total		16	100.0		

Table B-2.3.46 Question No. 42 (Q42): Opposition if a Regional Airport were Located at 25 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	3	18.8	23.1	23.1
	Neither Opposed nor Supportive	4	25.0	30.8	53.8
	Supportive	4	25.0	30.8	84.6
	Strongly Supportive	2	12.5	15.4	100.0
	Total	13	81.3	100.0	
Missing	No Answer	3	18.8		
	Total	3	18.8		
Total		16	100.0		

Table B-2.3.47 Question No. 43 (Q43): Opposition if a Regional Airport were Located at 32 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neither Opposed nor Supportive	4	25.0	30.8	30.8
	Supportive	7	43.8	53.8	84.6
	Strongly Supportive	2	12.5	15.4	100.0
	Total	13	81.3	100.0	
Missing	No Answer	3	18.8		
	Total	3	18.8		
Total		16	100.0		

Table B-2.3.48 Question No. 44 (Q44): People Supportive to the Airport

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance less than or equal to 25 km	7	43.8	70.0	70.0
	Distance more than 25 km	3	18.8	30.0	100.0
	Total	10	62.5	100.0	
Missing	No Answer	6	37.5		
	Total	6	37.5		
Total		16	100.0		

Table B-2.3.49 Question No. 45 (Q45): People Opposed to the Airport

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance less than or equal to 25 km	10	62.5	90.9	90.9
	Distance more than 25 km	1	6.3	9.1	100.0
	Total	11	68.8	100.0	
Missing	No Answer	5	31.3		
	Total	5	31.3		
Total		16	100.0		

Table B-2.3.50 Question No. 46 Section A (Q46A): People that Would Do Nothing If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Do nothing	2	12.5	100.0	100.0
	Total	2	12.5	100.0	
Missing	No Answer	14	87.5		
	Total	14	87.5		
Total		16	100.0		

Table B-2.3.51 Question No. 46 Section B (Q46B): People that Would Complaint with Authorities If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Complaint with authorities	6	37.5	100.0	100.0
	Total	6	37.5	100.0	
Missing	No Answer	10	62.5		
	Total	10	62.5		
Total		16	100.0		

Table B-2.3.52 Question No. 46 Section C (Q46C): People that Would Move Out of Their Houses If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Move out of house	1	6.3	100.0	100.0
	Total	1	6.3	100.0	
Missing	No Answer	15	93.8		
	Total	15	93.8		
Total		16	100.0		

Table B-2.3.53 Question No. 46 Section D (Q46D): People that Would Sell Their Houses If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sell your house	2	12.5	100.0	100.0
	Total	2	12.5	100.0	
Missing	No Answer	14	87.5		
	Total	14	87.5		
Total		16	100.0		

Table B-2.3.54 Question No. 46 Section E (Q46E): People that Would Participate Actively in Opposition Groups If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Active participation in opposition groups	8	50.0	100.0	100.0
	Total	8	50.0	100.0	
Missing	No Answer	8	50.0		
	Total	8	50.0		
Total		16	100.0		

Table B-2.3.55 Question No. 47 (Q47): If The Community Has Adequate Roads To Host a Regional Airport

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	1	6.3	8.3	8.3
	No	8	50.0	66.7	75.0
	Don't Know	3	18.8	25.0	100.0
	Total	12	75.0	100.0	
Missing	No Answer	4	25.0		
	Total	4	25.0		
Total		16	100.0		

Table B-2.3.56 Question No. 48 (Q48): If The Community Has the Adequate Contingency Equipment in Case of an Aircraft Emergency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	2	12.5	15.4	15.4
	No	9	56.3	69.2	84.6
	Don't Know	2	12.5	15.4	100.0
	Total	13	81.3	100.0	
Missing	No Answer	3	18.8		
	Total	3	18.8		
Total		16	100.0		

Table B-2.3.57 Question No. 53 (Q53): Gender of the Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	4	25.0	36.4	36.4
	Female	7	43.8	63.6	100.0
	Total	11	68.8	100.0	
Missing	No Answer	5	31.3		
	Total	5	31.3		
Total		16	100.0		

SECTION B-2 Frequencies from the Town of Picture Butte

Table B-2.4.1 Question No. 01 (Q1): About The Worst Case of Environmental Disaster That Has Occured

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Chernobyl	8	47.1	53.3	53.3
	Love Canal	1	5.9	6.7	60.0
	Bophal	6	35.3	40.0	100.0
	Total	15	88.2	100.0	
Missing	No Answer	2	11.8		
	Total	2	11.8		
Total		17	100.0		

Table B-2.4.2 Question No. 02 (Q2): If Technology Should Be Blame for All the Existing Environmental Deterioration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neither I Agree nor Disagree	6	35.3	37.5	37.5
	Disagree	10	58.8	62.5	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.3 Question No. 03 (Q3): If Technolgy Could Help to Remedy Environmental Deterioration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	14	82.4	87.5	87.5
	Neither Agree nor disagree	2	11.8	12.5	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.4 Question No. 04 (Q4): If the Existing Methodologies Used for Salid Waste Disposal Are Effective

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	4	23.5	25.0	25.0
	Neither I Agree nor Disagree	8	47.1	50.0	75.0
	Disagree	4	23.5	25.0	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.5 Question No. 05 (Q5): If They Believe that the Quality of the Environment Has Decreased in Recent Times

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	7	41.2	43.8	43.8
	Neither I Agree nor Disagree	1	5.9	6.3	50.0
	Disagree	8	47.1	50.0	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.6 Question No. 06 (Q6): If the Present Environmental Conditions In the Community Are Unbearable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	1	5.9	6.3	6.3
	Neither I Agree nor Disagree	6	35.3	37.5	43.8
	Disagree	9	52.9	56.3	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.7 Question No. 07 (Q7): About the Condition of the Quality of the Environment in the Community with the Passing of Time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Better	7	41.2	43.8	43.8
	Neither Better Nor Worse	6	35.3	37.5	81.3
	Worse	3	17.6	18.8	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.8 Question No. 08 (Q8): If They Were Very Concerned About the Global Quality of the Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	13	76.5	81.3	81.3
	Neither I Agree nor Disagree	3	17.6	18.8	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.9 Question No. 09 (Q9): If They Were Very Concern About the Quality of the Environment in the Surrounding Area of Their Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	12	70.6	75.0	75.0
	Neither I Agree nor Disagree	2	11.8	12.5	87.5
	Disagree	2	11.8	12.5	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.10 Question No. 10 (Q10): If They Believe That People Were Very Concerned About the Quality of the Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	13	76.5	81.3	81.3
	Neither I Agree nor Disagree	2	11.8	12.5	93.8
	Disagree	1	5.9	6.3	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.11 Question No. 11 (Q11): If in Their Community, People Would Participate Actively in Programs Designed to Improve the Quality of the Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	9	52.9	60.0	60.0
	Neither I Agree nor Disagree	6	35.3	40.0	100.0
	Total	15	88.2	100.0	
Missing	No Answer	2	11.8		
	Total	2	11.8		
Total		17	100.0		

Table B-2.4.12 Question No. 12 (Q12): If There Were Programs Specially Instated to Improve the Quality of the Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	9	52.9	60.0	60.0
	Neither I Agree nor Disagree	3	17.6	20.0	80.0
	Disagree	3	17.6	20.0	100.0
	Total	15	88.2	100.0	
Missing	No Answer	2	11.8		
	Total	2	11.8		
Total		17	100.0		

Table B-2.4.13 Question No. 13 (Q13): If a Rift Exist Between Factions of Their Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	12	70.6	80.0	80.0
	No	3	17.6	20.0	100.0
	Total	15	88.2	100.0	
Missing	No Answer	2	11.8		
	Total	2	11.8		
Total		17	100.0		

Table B-2.4.14 Question No. 14 (Q14): If There Is Any Rift Present Is It a Serious Situation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	23.5	26.7	26.7
	No	3	17.6	20.0	46.7
	Neither Serious nor Significant	8	47.1	53.3	100.0
	Total	15	88.2	100.0	
Missing	No Answer	2	11.8		
	Total	2	11.8		
Total		17	100.0		

Table B-2.4.15 Question No. 15 (Q15): About the Economic Growth of Their Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decreased	2	11.8	12.5	12.5
	No Change	3	17.6	18.8	31.3
	Increased	11	64.7	68.8	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.16 Question No. 16 (Q16): About the Unemployment Situation of the Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decreased	7	41.2	43.8	43.8
	No Change	4	23.5	25.0	68.8
	Increased	5	29.4	31.3	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.17 Question No. 17 (Q17): About the Average Income Situation of the Community During the Past Five Years

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Change	8	47.1	53.3	53.3
	Increased	7	41.2	46.7	100.0
	Total	15	88.2	100.0	
Missing	No Answer	2	11.8		
	Total	2	11.8		
Total		17	100.0		

Table B-2.4.18 Question No. 18 (Q18): About the Quality of Public Health Conditions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Decreased	1	5.9	6.3	6.3
	Decreased	3	17.6	18.8	25.0
	No Change	7	41.2	43.8	68.8
	Increased	5	29.4	31.3	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.19 Question No. 19 (Q19): About the Quality on the Standard of Living in the Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decreased	1	5.9	6.3	6.3
	No Change	7	41.2	43.8	50.0
	Increased	8	47.1	50.0	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.20 Question No. 20 (Q20): About the Quality of Public Services in Their Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Decreased	5	29.4	31.3	31.3
	No Change	3	17.6	18.8	50.0
	Increased	8	47.1	50.0	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.21 Question No. 21 (Q21): If the Present Public Health Conditions in Their Community Are Unbeareable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	3	17.6	18.8	18.8
	No	13	76.5	81.3	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.22 Question No. 22 (Q22): If There Has Been the Recent Loss of a Facility That Contributed To the Economical Status of the Community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	1	5.9	6.3	6.3
	No	9	52.9	56.3	62.5
	Don't Know	6	35.3	37.5	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.23 Question No. 23 (Q23): If There Is the Need to Improve the Economy of the Community Due to a Recent or Sudden Economic Loss

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	3	17.6	18.8	18.8
	No	7	41.2	43.8	62.5
	Don't Know	6	35.3	37.5	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.24 Question No. 24 (Q24): If The Cultural Characteristics of the Community Are at Risk of Being Lost

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	1	5.9	6.3	6.3
	No	15	88.2	93.8	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.25 Question No. 25 (Q25): If They Consider that Their Community is Losing Political Weight with the Provincial Government

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	7	41.2	43.8	43.8
	No	9	52.9	56.3	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.26 Question No. 26 (Q26): If They Consider that Their Community is Losing Political Weight with the Federal Government

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	5	29.4	35.7	35.7
	No	9	52.9	64.3	100.0
	Total	14	82.4	100.0	
Missing	No Answer	3	17.6		
	Total	3	17.6		
Total		17	100.0		

Table B-2.4.27 Question No. 27 (Q27): If They Know of Any Past or Present Environmental Problem

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	12	70.6	75.0	75.0
	No	4	23.5	25.0	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.28 Question No. 28 (Q28): Respondent's Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20	1	5.9	6.3	6.3
	23	1	5.9	6.3	12.5
	24	1	5.9	6.3	18.8
	27	1	5.9	6.3	25.0
	31	1	5.9	6.3	31.3
	41	1	5.9	6.3	37.5
	45	1	5.9	6.3	43.8
	47	2	11.8	12.5	56.3
	50	1	5.9	6.3	62.5
	51	1	5.9	6.3	68.8
	54	1	5.9	6.3	75.0
	57	2	11.8	12.5	87.5
	63	1	5.9	6.3	93.8
	67	1	5.9	6.3	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.29 Question No. 29 (Q29): Respondents Married

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	13	76.5	81.3	81.3
	No	3	17.6	18.8	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.30 Question No. 30 (Q30): Respondents with Children

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	6	35.3	37.5	37.5
	No	10	58.8	62.5	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.31 Question No. 31 (Q31): Opposition if a Municipal Landfill were Located at 1.6 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	3	17.6	18.8	18.8
	Opposed	8	47.1	50.0	68.8
	Neither Opposed nor Supportive	4	23.5	25.0	93.8
	Supportive	1	5.9	6.3	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.32 Question No. 32 (Q32): Opposition if a Municipal Landfill were Located at 8 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	1	5.9	6.3	6.3
	Opposed	2	11.8	12.5	18.8
	Neither Opposed nor Supportive	6	35.3	37.5	56.3
	Supportive	7	41.2	43.8	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.33 Question No. 33 (Q33): Opposition if a Municipal Landfill were Located at 25 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Opposed	2	11.8	12.5	12.5
	Neither Opposed nor Supportive	6	35.3	37.5	50.0
	Supportive	7	41.2	43.8	93.8
	Strongly Supportive	1	5.9	6.3	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.34 Question No. 34 (Q34): Opposition if a Municipal Landfill were Located at 32 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Opposed	1	5.9	6.3	6.3
	Neither Opposed nor Supportive	6	35.3	37.5	43.8
	Supportive	6	35.3	37.5	81.3
	Strongly Supportive	3	17.6	18.8	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.35 Question No. 35 (Q35): People Supportive to the Landfill

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance less than or equal to 25 km	8	47.1	72.7	72.7
	Distance more than 25 km	3	17.6	27.3	100.0
	Total	11	64.7	100.0	
Missing	No Answer	6	35.3		
	Total	6	35.3		
Total		17	100.0		

Table B-2.4.36 Question No. 36 (Q36): People Opposed to the Landfill

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance less than or equal to 25 km	10	58.8	83.3	83.3
	Distance more than 25 km	2	11.8	16.7	100.0
	Total	12	70.6	100.0	
Missing	No Answer	5	29.4		
	Total	5	29.4		
Total		17	100.0		

Table B-2.4.37 Question No. 37 Section A (Q37A): People that Would Do Nothing If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Do nothing	1	5.9	100.0	100.0
	Total	1	5.9	100.0	
Missing	No Answer	16	94.1		
	Total	16	94.1		
Total		17	100.0		

Table B-2.4.38 Question No. 37 Section B (Q37B): People that Would Complaint with Authorities If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Complaint with authorities	6	35.3	100.0	100.0
	Total	6	35.3	100.0	
Missing	No Answer	11	64.7		
	Total	11	64.7		
Total		17	100.0		

Table B-2.4.39 Question No. 37 Section C (Q37C): People that Would Move Out of Their Houses If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Move out of house	1	5.9	100.0	100.0
	Total	1	5.9	100.0	
Missing	No Answer	16	94.1		
	Total	16	94.1		
Total		17	100.0		

Table B-2.4.40 Question No. 37 Section D (Q37D): People that Would Sell Their Houses If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sell your house	1	5.9	100.0	100.0
	Total	1	5.9	100.0	
Missing	No Answer	16	94.1		
	Total	16	94.1		
Total		17	100.0		

Table B-2.4.41 Question No. 37 Section E (Q37E): People that Would Participate Actively in Opposition Groups If a Landfill Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Active participation in opposition groups	7	41.2	100.0	100.0
	Total	7	41.2	100.0	
Missing	No Answer	10	58.8		
	Total	10	58.8		
Total		17	100.0		

Table B-2.4.42 Question No. 38 (Q38): If The Community Has Adequate Roads To Host a Municipal Landfill

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	5	29.4	31.3	31.3
	No	5	29.4	31.3	62.5
	Don't Know	6	35.3	37.5	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.43 Question No. 39 (Q39): If the Community Has the Adequate Contingency Equipment in Case of a Fire Emergency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	7	41.2	43.8	43.8
	No	7	41.2	43.8	87.5
	Don't Know	2	11.8	12.5	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.44 Question No.40 (Q40): Opposition if a Regional Airport were Located at 1.6 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	2	11.8	12.5	12.5
	Opposed	9	52.9	56.3	68.8
	Neither Opposed nor Supportive	3	17.6	18.8	87.5
	Supportive	2	11.8	12.5	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.45 Question No. 41 (Q41): Opposition if a Regional Airport were Located at 8 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Opposed	1	5.9	6.3	6.3
	Opposed	4	23.5	25.0	31.3
	Neither Opposed nor Supportive	4	23.5	25.0	56.3
	Supportive	7	41.2	43.8	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.46 Question No. 42 (Q42): Opposition if a Regional Airport were Located at 25 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Opposed	1	5.9	6.3	6.3
	Neither Opposed nor Supportive	7	41.2	43.8	50.0
	Supportive	8	47.1	50.0	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.47 Question No. 43 (Q43): Opposition if a Regional Airport were Located at 32 Km

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Opposed	1	5.9	6.3	6.3
	Neither Opposed nor Supportive	5	29.4	31.3	37.5
	Supportive	10	58.8	62.5	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.48 Question No. 44 (Q44): People Supportive to the Airport

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance less than or equal to 25 km	7	41.2	77.8	77.8
	Distance more than 25 km	2	11.8	22.2	100.0
	Total	9	52.9	100.0	
Missing	No Answer	8	47.1		
	Total	8	47.1		
Total		17	100.0		

Table B-2.4.49 Question No. 45 (Q45): People Opposed to the Airport

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance less than or equal to 25 km	10	58.8	100.0	100.0
	Total	10	58.8	100.0	
Missing	No Answer	7	41.2		
	Total	7	41.2		
Total		17	100.0		

Table B-2.4.50 Question No. 46 Section A (Q46A): People that Would Do Nothing If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Do nothing	2	11.8	100.0	100.0
	Total	2	11.8	100.0	
Missing	No Answer	15	88.2		
	Total	15	88.2		
Total		17	100.0		

Table B-2.4.51 Question No. 46 Section B (Q46B): People that Would Complaint with Authorities If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Complaint with authorities	5	29.4	100.0	100.0
	Total	5	29.4	100.0	
Missing	No Answer	12	70.6		
	Total	12	70.6		
Total		17	100.0		

Table B-2.4.52 Question No. 46 Section C (Q46C): People that Would Move Out of Their Houses If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent
Missing	No Answer	17	100.0
	Total	17	100.0
Total		17	100.0

Table B-2.4.53 Question No. 46 Section D (Q46D): People that Would Sell Their Houses If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sell your house	1	5.9	100.0	100.0
	Total	1	5.9	100.0	
Missing	No Answer	16	94.1		
	Total	16	94.1		
Total		17	100.0		

Table B-2.4.54 Question No. 46 Section E (Q46E): People that Would Participate Actively in Opposition Groups If a Regional Airport Were Located Within an Opposition Distance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Active participation in opposition groups	6	35.3	100.0	100.0
	Total	6	35.3	100.0	
Missing	No Answer	11	64.7		
	Total	11	64.7		
Total		17	100.0		

Table B-2.4.55 Question No. 47 (Q47): If The Community Has Adequate Roads To Host a Regional Airport

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	3	17.6	18.8	18.8
	No	9	52.9	56.3	75.0
	Don't Know	4	23.5	25.0	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.56 Question No. 48 (Q48): If The Community Has the Adequate Contingency Equipment in Case of an Aircraft Emergency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	3	17.6	18.8	18.8
	No	13	76.5	81.3	100.0
	Total	16	94.1	100.0	
Missing	No Answer	1	5.9		
	Total	1	5.9		
Total		17	100.0		

Table B-2.4.57 Question No. 53 (Q53): Gender of the Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	3	17.6	30.0	30.0
	Female	7	41.2	70.0	100.0
	Total	10	58.8	100.0	
Missing	No Answer	7	41.2		
	Total	7	41.2		
Total		17	100.0		

APPENDIX B

SECTION B-3

TABLE B-3.1.1 STATISTICAL CROSSTABULATION FOR A LANDFILL CONSIDERING THE THREE COMMUNITIES COMBINED

	Independent Variables	Level of Measurement	Test Used	Dependent Variable	
				Opposition to a Landfill located at 8 km Distance	
				Coefficient Value	Proximate Significance
1	Rift in the Community	Nominal	Goodman and Kruskal Tau	0.011	0.830(d)
2	Age	Nominal	Lambda	0.038	0.763
3	Marital Status	Nominal	Goodman and Kruskal Tau	0.005	0.941(d)
4	Children in the House	Nominal	Lambda	0.192	0.121
5	Gender	Nominal	Goodman and Kruskal Tau	0.016	0.758(d)
6	Decrease in the Quality of the Environment in the Community in Recent Times	Ordinal	Somers' d	0.264	0.083 ***
7	Present Unbearable Environmental Conditions in the Community	Ordinal	Somers' d	0.138	0.439
8	Future conditions in the Quality of the Environment	Ordinal	Somers' d	-0.2	0.164
9	Very Concerned About the Global Environment	Ordinal	Somers' d	0.4	0.053 ***
10	Very Concerned About the Environment in the Community	Ordinal	Somers' d	0.54	0.001 *
11	People Very Concerned about the Quality of the Environment in the Community	Ordinal	Somers' d	-0.113	0.519
12	People Participation in Programs to Improve the Environment	Ordinal	Somers' d	-0.228	0.17
13	In the Community there are Programs to Improve the Quality of the Environment	Ordinal	Somers' d	-0.199	0.205
14	Change in Average Income During the Past Five Years	Ordinal	Somers' d	0.082	0.589
15	Change in Public Health Conditions in the Community	Ordinal	Somers' d	0.139	0.344
16	Change in the Quality on the Standard of Living in the Community for the Past 2 Years	Ordinal	Somers' d	0.125	0.346
17	Change in the Quality of Public Services in the Community during the Past 2 Years	Ordinal	Somers' d	0.353	0.001 *
18	Loss of Political Weight with the Provincial Government	Nominal	Lambda	0.083	0.525
19	Loss of Political Weight with the Federal Government	Nominal	Lambda	0.091	0.562
20	Knowledge of any Past or Present Problems Related with the Environment	Nominal	Goodman and Kruskal Tau	0.027	0.406(c)

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Cannot be computed because the asymptotic standard error equals zero.
d Based on chi-square approximation
* Significant at the 0.01 Confidence Level
** Significant at the 0.05 Confidence Level
*** Significant at the 0.1 Confidence Level

TABLE B-3.1.2 STATISTICAL CROSSTABULATION FOR A NEARBY AIRPORT CONSIDERING THE THREE COMMUNITIES COMBINED

	Independent Variables	Level of Measurement	Test Used	Dependent Variable	
				Opposition to a Landfill located at 8 km Distance	
				Coefficient Value	Proximate Significance
1	Rift in the Community	Nominal	Goodman and Kruskal Tau	0.02	0.585(d)
2	Age	Nominal	Lambda	0.067	0.525
3	Marital Status	Nominal	Lambda	0.067	0.311
4	Children in the House	Nominal	Lambda	0.067	0.477
5	Gender	Nominal	Goodman and Kruskal Tau	0.01	0.895(d)
6	Decrease in the Quality of the Environment in the Community in Recent Times	Ordinal	Somers' d	-0.02	0.902
7	Present Unbearable Environmental Conditions in the Community	Ordinal	Somers' d	-0.223	0.167
8	Future conditions in the Quality of the Environment	Ordinal	Somers' d	-0.021	0.897
9	Very Concerned About the Global Environment	Ordinal	Somers' d	0.196	0.387
10	Very Concerned About the Environment in the Community	Ordinal	Somers' d	0.261	0.265
11	People Very Concerned about the Quality of the Environment in the Community	Ordinal	Somers' d	-0.129	0.438
12	People Participation in Programs to Improve the Environment	Ordinal	Somers' d	-0.128	0.417
13	In the Community there are Programs to Improve the Quality of the Environment	Ordinal	Somers' d	0.088	0.618
14	Change in Average Income During the Past Five Years	Ordinal	Somers' d	-0.016	0.911
15	Change in Public Health Conditions in the Community	Ordinal	Somers' d	-0.114	0.464
16	Change in the Quality on the Standard of Living in the Community for the Past 2 Years	Ordinal	Somers' d	0.005	0.97
17	Change in the Quality of Public Services in the Community during the Past 2 Years	Ordinal	Somers' d	0.265	0.034 **
18	Loss of Political Weight with the Provincial Government	Nominal	Goodman and Kruskal Tau	0.001	0.996(d)
19	Loss of Political Weight with the Federal Government	Nominal	Goodman and Kruskal Tau	0.007	0.899(c)
20	Knowledge of any Past or Present Problems Related with the Environment	Nominal	Goodman and Kruskal Tau	0.042	0.183(c)

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Cannot be computed because the asymptotic standard error equals zero.
d Based on chi-square approximation
* Significant at the 0.01 Confidence Level
** Significant at the 0.05 Confidence Level
*** Significant at the 0.1 Confidence Level

TABLE B-3.2.1 STATISTICAL CROSSTABULATION FOR A REGIONAL LANDFILL NEARBY THE VILLAGE OF BARONS

				Dependent Variable	
				Opposition to a Landfill located at 8 km Distance	
	Independent Variables	Level of Measurement	Test Used	Coefficient Value	Proximate Significance
1	Rift in the Community	Nominal	Goodman and Kruskal Tau	0.141	0.284(c)
2	Age	Nominal	Lambda	0.143	0.558
3	Marital Status	Nominal	Goodman and Kruskal Tau	0.051	0.689(c)
4	Children in the House	Nominal	Lambda	0.143	0.558
5	Gender	Nominal	Lambda	0.167	0.651
6	Decrease in the Quality of the Environment in the Community in Recent Times	Ordinal	Somers' d	0.39	0.171
7	Present Unbearable Environmental Conditions in the Community	Ordinal	Somers' d	-0.19	0.55
8	Future conditions in the Quality of the Environment	Ordinal	Somers' d	-0.545	0.026 **
9	Very Concerned About the Global Environment	Ordinal	Somers' d	0.8	0.071 ***
10	Very Concerned About the Environment in the Community	Ordinal	Somers' d	0.778	0.008
11	People Very Concerned about the Quality of the Environment in the Community	Ordinal	Somers' d	-0.378	0.089 ***
12	People Participation in Programs to Improve the Environment	Ordinal	Somers' d	-0.273	0.307
13	In the Community there are Programs to Improve the Quality of the Environment	Ordinal	Somers' d	-0.429	0.106
14	Change in Average Income During the Past Five Years	Ordinal	Somers' d	0.158	0.36
15	Change in Public Health Conditions in the Community	Ordinal	Somers' d	-0.444	0.162
16	Change in the Quality on the Standard of Living in the Community for the Past 2 Years	Ordinal	Somers' d	-0.133	0.626
17	Change in the Quality of Public Services in the Community during the Past 2 Years	Ordinal	Somers' d	0.487	0.023 **
18	Loss of Political Weight with the Provincial Government	Nominal	Goodman and Kruskal Tau	0.084	0.452(c)
19	Loss of Political Weight with the Federal Government	Nominal	Goodman and Kruskal Tau	0.097	0.373(c)
20	Knowledge of any Past or Present Problems Related with the Environment	Nominal	Goodman and Kruskal Tau	0.102	0.433(c)

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Cannot be computed because the asymptotic standard error equals zero.
d Based on chi-square approximation
* Significant at the 0.01 Confidence Level
** Significant at the 0.05 Confidence Level
*** Significant at the 0.1 Confidence Level

TABLE B-3.2.2 STATISTICAL CROSSTABULATION FOR A REGIONAL AIRPORT NEARBY THE VILLAGE OF BARONS

				Dependent Variable	
				Opposition to a Landfill located at 8 km Distance	
	Independent Variables	Level of Measurement	Test Used	Coefficient Value	Proximate Significance
1	Rift in the Community	Nominal	Lambda	0.143	0.193
2	Age	Nominal	Lambda	0.111	0.559
3	Marital Status	Nominal	Lambda	0.111	0.298
4	Children in the House	Nominal	Lambda	0.111	0.559
5	Gender	Nominal	Lambda	0.333	0.467
6	Decrease in the Quality of the Environment in the Community in Recent Times	Ordinal	Somers' d	0.188	0.532
7	Present Unbearable Environmental Conditions in the Community	Ordinal	Somers' d	-0.391	0.265
8	Future conditions in the Quality of the Environment	Ordinal	Somers' d	-0.58	0.029 **
9	Very Concerned About the Global Environment	Ordinal	Somers' d	0.364	0.473
10	Very Concerned About the Environment in the Community	Ordinal	Somers' d	0.867	0.007 *
11	People Very Concerned about the Quality of the Environment in the Community	Ordinal	Somers' d	-0.385	0.064 ***
12	People Participation in Programs to Improve the Environment	Ordinal	Somers' d	-0.481	0.024 **
13	In the Community there are Programs to Improve the Quality of the Environment	Ordinal	Somers' d	-0.356	0.21
14	Change in Average Income During the Past Five Years	Ordinal	Somers' d	0.159	0.496
15	Change in Public Health Conditions in the Community	Ordinal	Somers' d	-0.6	0.109
16	Change in the Quality on the Standard of Living in the Community for the Past 2 Years	Ordinal	Somers' d	-0.058	0.839
17	Change in the Quality of Public Services in the Community during the Past 2 Years	Ordinal	Somers' d	0.341	0.143
18	Loss of Political Weight with the Provincial Government	Nominal	Goodman and Kruskal Tau	0.04	0.750(c)
19	Loss of Political Weight with the Federal Government	Nominal	Goodman and Kruskal Tau	0.057	0.602(c)
20	Knowledge of any Past or Present Problems Related with the Environment	Nominal	Lambda	0.143	0.738

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Cannot be computed because the asymptotic standard error equals zero.
d Based on chi-square approximation
* Significant at the 0.01 Confidence Level
** Significant at the 0.05 Confidence Level
*** Significant at the 0.1 Confidence Level

TABLE B-3.3.1 STATISTICAL CROSSTABULATION FOR A REGIONAL LANDFILL NEARBY THE VILLAGE OF NOBLEFORD

	Independent Variables	Level of Measurement	Test Used	Dependent Variable	
				Opposition to a Landfill located at 8 km Distance	
				Coefficient Value	Proximate Significance
1	Rift in the Community	Nominal	Lambda	0.143	0.558
2	Age	Nominal	Goodman and Kruskal Tau	0.014	0.908(c)
3	Marital Status	Nominal	Lambda	0.111	0.299
4	Children in the House	Nominal	Lambda	0.111	0.652
5	Gender	Nominal	Goodman and Kruskal Tau	0.045	0.720(c)
6	Decrease in the Quality of the Environment in the Community in Recent Times	Ordinal	Somers' d	0.463	0.027 **
7	Present Unbearable Environmental Conditions in the Community	Ordinal	Somers' d	0.565	0.227
8	Future conditions in the Quality of the Environment	Ordinal	Somers' d	-0.27	0.258
9	Very Concerned About the Global Environment	Ordinal	Somers' d	0.083	0.742
10	Very Concerned About the Environment in the Community	Ordinal	Somers' d	0.4	0.209
11	People Very Concerned about the Quality of the Environment in the Community	Ordinal	Somers' d	-0.058	0.858
12	People Participation in Programs to Improve the Environment	Ordinal	Somers' d	-0.273	0.355
13	In the Community there are Programs to Improve the Quality of the Environment	Ordinal	Somers' d	-0.222	0.414
14	Change in Average Income During the Past Five Years	Ordinal	Somers' d	0.143	0.654
15	Change in Public Health Conditions in the Community	Ordinal	Somers' d	0.288	0.35
16	Change in the Quality on the Standard of Living in the Community for the Past 2 Years	Ordinal	Somers' d	0.413	0.009 *
17	Change in the Quality of Public Services in the Community during the Past 2 Years	Ordinal	Somers' d	0.583	0.001 *
18	Loss of Political Weight with the Provincial Government	Nominal	Goodman and Kruskal Tau	0.009	0.958(c)
19	Loss of Political Weight with the Federal Government	Nominal	Lambda	0.125	0.558
20	Knowledge of any Past or Present Problems Related with the Environment	Nominal	Lambda	0.143	0.558

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Cannot be computed because the asymptotic standard error equals zero.
d Based on chi-square approximation
* Significant at the 0.01 Confidence Level
** Significant at the 0.05 Confidence Level
*** Significant at the 0.1 Confidence Level

TABLE B-3.3.2 STATISTICAL CROSSTABULATION FOR A REGIONAL AIRPORT NEARBY THE VILLAGE OF NOBLEFORD

	Independent Variables	Level of Measurement	Test Used	Dependent Variable	
				Opposition to a Landfill located at 8 km Distance	
				Coefficient Value	Proximate Significance
1	Rift in the Community	Nominal	Lambda	0.167	0.557
2	Age	Nominal	Lambda	0.111	0.652
3	Marital Status	Nominal	Goodman and Kruskal Tau	0.034	0.804(d)
4	Children in the House	Nominal	Lambda	0.111	0.559
5	Gender	Nominal	Goodman and Kruskal Tau	0.075	0.568(d)
6	Decrease in the Quality of the Environment in the Community in Recent Times	Ordinal	Somers' d	0.133	0.655
7	Present Unbearable Environmental Conditions in the Community	Ordinal	Somers' d	-0.238	0.543
8	Future conditions in the Quality of the Environment	Ordinal	Somers' d	0.222	0.453
9	Very Concerned About the Global Environment	Ordinal	Somers' d	0.136	0.648
10	Very Concerned About the Environment in the Community	Ordinal	Somers' d	-0.75	0.265
11	People Very Concerned about the Quality of the Environment in the Community	Ordinal	Somers' d	-0.068	0.821
12	People Participation in Programs to Improve the Environment	Ordinal	Somers' d	0.106	0.679
13	In the Community there are Programs to Improve the Quality of the Environment	Ordinal	Somers' d	0.156	0.629
14	Change in Average Income During the Past Five Years	Ordinal	Somers' d	-0.238	0.361
15	Change in Public Health Conditions in the Community	Ordinal	Somers' d	0.122	0.661
16	Change in the Quality on the Standard of Living in the Community for the Past 2 Years	Ordinal	Somers' d	0.055	0.826
17	Change in the Quality of Public Services in the Community during the Past 2 Years	Ordinal	Somers' d	0.315	0.283
18	Loss of Political Weight with the Provincial Government	Nominal	Goodman and Kruskal Tau	0.083	0.504(d)
19	Loss of Political Weight with the Federal Government	Nominal	Goodman and Kruskal Tau	0.092	0.451(c)
20	Knowledge of any Past or Present Problems Related with the Environment	Nominal	Lambda	0.143	0.558

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Cannot be computed because the asymptotic standard error equals zero.
d Based on chi-square approximation
* Significant at the 0.01 Confidence Level
** Significant at the 0.05 Confidence Level
*** Significant at the 0.1 Confidence Level

TABLE B-3.4.1 STATISTICAL CROSSTABULATION FOR A REGIONAL LANDFILL NEARBY THE TOWN OF PICTURE BUTTE

	Independent Variables	Level of Measurement	Test Used	Dependent Variable Opposition to a Landfill located at 8 km Distance Coefficient Value	Dependent Variable Opposition to a Landfill located at 8 km Distance Proximate Sigificance
1	Rift in the Community	Nominal	Goodman and Kruskal Tau	0.075	0.367(d)
2	Age	Nominal	Lambda	0.111	0.653
3	Marital Status	Nominal	Lambda	0.111	0.56
4	Children in the House	Nominal	Lambda	0.333	0.154
5	Gender	Nominal	Lambda	0.167	0.651
6	Decrease in the Quality of the Environment in the Community in Recent Times	Ordinal	Somers' d	-0.014	0.957
7	Present Unbearable Environmental Conditions in the Community	Ordinal	Somers' d	0.261	0.236
8	Future conditions in the Quality of the Environment	Ordinal	Somers' d	0.173	0.476
9	Very Concerned About the Global Environment	Ordinal	Somers' d	0.359	0.228
10	Very Concerned About the Environment in the Community	Ordinal	Somers' d	0.481	0.054 ***
11	People Very Concerned about the Quality of the Environment in the Community	Ordinal	Somers' d	0.366	0.208
12	People Participation in Programs to Improve the Environment	Ordinal	Somers' d	-0.13	0.641
13	In the Community there are Programs to Improve the Quality of the Environment	Ordinal	Somers' d	0.063	0.769
14	Change in Average Income During the Past Five Years	Ordinal	Somers' d	-0.161	0.562
15	Change in Public Health Conditions in the Community	Ordinal	Somers' d	0.372	0.119
16	Change in the Quality on the Standard of Living in the Community for the Past 2 Years	Ordinal	Somers' d	0.141	0.53
17	Change in the Quality of Public Services in the Community during the Past 2 Years	Ordinal	Somers' d	0.139	0.561
18	Loss of Political Weight with the Provincial Government	Nominal	Lambda	0.222	0.302
19	Loss of Political Weight with the Federal Government	Nominal	Lambda	0.143	0.559
20	Knowledge of any Past or Present Problems Related with the Environment	Nominal	Lambda	0.111	0.738

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Cannot be computed because the asymptotic standard error equals zero.
d Based on chi-square approximation
* Significant at the 0.01 Confidence Level
** Significant at the 0.05 Confidence Level
*** Significant at the 0.1 Confidence Level

TABLE B-3.4.2 STATISTICAL CROSSTABULATION FOR A REGIONAL AIRPORT NEARBY THE TOWN OF PICTURE BUTTE

	Independent Variables	Level of Measurement	Test Used	Dependent Variable	
				Opposition to a Landfill located at 8 km Distance	
				Coefficient Value	Proximate Significance
1	Rift in the Community	Nominal	Lambda	0.125	0.559
2	Age	Nominal	Goodman and Kruskal Tau	0.019	0.835(d)
3	Marital Status	Nominal	Lambda	0.111	0.56
4	Children in the House	Nominal	Goodman and Kruskal Tau	0.025	0.768(c)
5	Gender	Nominal	Lambda	0.286	0.292
6	Decrease in the Quality of the Environment in the Community in Recent Times	Ordinal	Somers' d	-0.324	0.194
7	Present Unbearable Environmental Conditions in the Community	Ordinal	Somers' d	-0.029	0.899
8	Future conditions in the Quality of the Environment	Ordinal	Somers' d	0.321	0.097 ***
9	Very Concerned About the Global Environment	Ordinal	Somers' d	0.205	0.577
10	Very Concerned About the Environment in the Community	Ordinal	Somers' d	0.038	0.904
11	People Very Concerned about the Quality of the Environment in the Community	Ordinal	Somers' d	0.415	0.145
12	People Participation in Programs to Improve the Environment	Ordinal	Somers' d	0.259	0.36
13	In the Community there are Programs to Improve the Quality of the Environment	Ordinal	Somers' d	0.444	0.028 **
14	Change in Average Income During the Past Five Years	Ordinal	Somers' d	-0.357	0.167
15	Change in Public Health Conditions in the Community	Ordinal	Somers' d	-0.151	0.511
16	Change in the Quality on the Standard of Living in the Community for the Past 2 Years	Ordinal	Somers' d	-0.141	0.53
17	Change in the Quality of Public Services in the Community during the Past 2 Years	Ordinal	Somers' d	0.063	0.793
18	Loss of Political Weight with the Provincial Government	Nominal	Goodman and Kruskal Tau	0.022	0.803(d)
19	Loss of Political Weight with the Federal Government	Nominal	Goodman and Kruskal Tau	0.02	0.852(d)
20	Knowledge of any Past or Present Problems Related with the Environment	Nominal	Goodman and Kruskal Tau	0.004	0.982(d)

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Cannot be computed because the asymptotic standard error equals zero.
d Based on chi-square approximation
* Significant at the 0.01 Confidence Level
** Significant at the 0.05 Confidence Level
*** Significant at the 0.1 Confidence Level

APPENDIX B

SECTION B-4

SECTION B-4 ORDINAL REGRESSION MODELS FOR THE THREE COMMUNITIES COMBINED

Ordinal Regression for Landfill Distance

MODEL No. 1

Table B-4.1.1 Case Processing Summary

		N	Marginal Percentage
8 km Landfill Distance	Strongly Opposed	5	12.2%
	Opposed	6	14.6%
	Neither Opposed nor Supportive	13	31.7%
	Supportive	16	39.0%
	Strongly Supportive	1	2.4%
Age	Younger Person (<45 years)	17	41.5%
	Older Person (>45 years)	24	58.5%
Children in the House	Yes	16	39.0%
	No	25	61.0%
Decrease in the Quality of the Environment in the Community in Recent Times	I Agree	18	43.9%
	Neither I Agree nor Disagree	5	12.2%
	I Disagree	18	43.9%
Very Concerned About the Global Environment	I Agree	34	82.9%
	Neither I Agree Nor Disagree	7	17.1%
Very Concerned About the Environment in the Community	I Agree	32	78.0%
	Neither I Agree Nor Disagree	6	14.6%
	I Disagree	3	7.3%
Change in the Quality of Public Services in the Community in the Past 2 Years	Strongly Decreased	2	4.9%
	Decreased	10	24.4%
	No Change	18	43.9%
	Increased	11	26.8%
Valid		41	100.0%
Missing		2	
Total		43	

Table B-4.1.2 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	100.755			
Final	76.482	24.273	10	.007

Link function: Logit.

Table B-4.1.3 Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	77.549	106	.983
Deviance	67.458	106	.999

Link function: Logit.

Table B-4.1.4 Pseudo R-Square

Cox and Snell	.447
Nagelkerke	.478
McFadden	.218

Link function: Logit.

Table B-4.1.5 Parameter Estimates

							95% Confidence Interval	
		Estimate	Std. Error	Wald	df	Sig.	Lower Bound	Upper Bound
Threshold	[L8KM = 1]	-6.113	1.921	10.124	1	.001	-9.878	-2.347
	[L8KM = 2]	-4.847	1.840	6.939	1	.008	-8.454	-1.241
	[L8KM = 3]	-2.764	1.739	2.524	1	.112	-6.173	.646
	[L8KM = 4]	1.896	1.832	1.071	1	.301	-1.695	5.486
Location	[AGE=1]	.452	1.031	.192	1	.661	-1.570	2.474
	[AGE=2]	0[a]	.	.	0	.	.	.
	[CHILDREN=1]	-2.039	1.092	3.489	1	.062	-4.179	.101
	[CHILDREN=2]	0[a]	.	.	0	.	.	.
	[ENCOQ5=1]	-.341	.766	.199	1	.656	-1.843	1.160
	[ENCOQ5=2]	.848	1.069	.630	1	.427	-1.246	2.943
	[ENCOQ5=3]	0[a]	.	.	0	.	.	.
	[GLOBALQ8=1]	-1.214	1.004	1.461	1	.227	-3.183	.755
	[GLOBALQ8=2]	0[a]	.	.	0	.	.	.
	[ENCOQ9=1]	-1.063	1.329	.640	1	.424	-3.668	1.542
	[ENCOQ9=2]	1.455	1.646	.781	1	.377	-1.772	4.681
	[ENCOQ9=3]	0[a]	.	.	0	.	.	.
	[PUSEQ20=1]	-3.125	1.822	2.940	1	.086	-6.697	.447
	[PUSEQ20=2]	-1.978	.977	4.097	1	.043	-3.892	-.063
	[PUSEQ20=3]	-.612	.846	.524	1	.469	-2.269	1.045
	[PUSEQ20=4]	0[a]	.	.	0	.	.	.

Link function: Logit.

[a] This parameter is set to zero because it is redundant.

Ordinal Regression for Landfill Distance

MODEL No. 2

Table B-4.1.6 Case Processing Summary

		N	Marginal Percentage
8 km Landfill Distance	Strongly Opposed	5	12.2%
	Opposed	6	14.6%
	Neither Opposed nor Supportive	13	31.7%
	Supportive	16	39.0%
	Strongly Supportive	1	2.4%
Decrease in the Quality of the Environment in the Community in Recent Times	I Agree	18	43.9%
	Neither I Agree nor Disagree	5	12.2%
	I Disagree	18	43.9%
Very Concerned About the Global Environment	I Agree	34	82.9%
	Neither I Agree Nor Disagree	7	17.1%
Very Concerned About the Environment in the Community	I Agree	32	78.0%
	Neither I Agree Nor Disagree	6	14.6%
	I Disagree	3	7.3%
Change in the Quality of Public Services in the Community in the Past 2 Years	Strongly Decreased	2	4.9%
	Decreased	10	24.4%
	No Change	18	43.9%
	Increased	11	26.8%
Valid		41	100.0%
Missing		2	
Total		43	

Table B-4.1.7 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	78.833			
Final	60.583	18.250	8	.019

Link function: Logit.

Table B-4.1.8 Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	48.511	72	.985
Deviance	37.840	72	1.000

Link function: Logit.

Table B-4.1.9 Pseudo R-Square

Cox and Snell	.359
Nagelkerke	.385
McFadden	.164

Link function: Logit.

Table B-4.1.10 Parameter Estimates

							95% Confidence Interval	
		Estimate	Std. Error	Wald	df	Sig.	Lower Bound	Upper Bound
Threshold	[L8KM = 1]	-4.505	1.639	7.556	1	.006	-7.717	-1.293
	[L8KM = 2]	-3.273	1.574	4.322	1	.038	-6.358	-.187
	[L8KM = 3]	-1.421	1.504	.893	1	.345	-4.369	1.527
	[L8KM = 4]	2.815	1.779	2.505	1	.114	-.671	6.301
Location	[ENCOQ5=1]	-.147	.745	.039	1	.844	-1.607	1.314
	[ENCOQ5=2]	.678	1.042	.424	1	.515	-1.363	2.720
	[ENCOQ5=3]	0[a]	.	.	0	.	.	.
	[GLOBALQ8=1]	-1.007	.960	1.101	1	.294	-2.888	.874
	[GLOBALQ8=2]	0[a]	.	.	0	.	.	.
	[ENCOQ9=1]	-1.123	1.294	.754	1	.385	-3.658	1.412
	[ENCOQ9=2]	1.464	1.632	.804	1	.370	-1.735	4.662
	[ENCOQ9=3]	0[a]	.	.	0	.	.	.
	[PUSEQ20=1]	-2.574	1.591	2.618	1	.106	-5.691	.544
	[PUSEQ20=2]	-1.100	.870	1.597	1	.206	-2.805	.606
	[PUSEQ20=3]	9.3E-02	.769	.015	1	.904	-1.414	1.600
	[PUSEQ20=4]	0[a]	.	.	0	.	.	.

Link function: Logit.

[a] This parameter is set to zero because it is redundant.

Ordinal Regression for Landfill Distance

MODEL No. 3

Table B-4.1.11 Case Processing Summary

		N	Marginal Percentage
8 km Landfill Distance	Strongly Opposed	6	14.3%
	Opposed	6	14.3%
	Neither Opposed nor Supportive	13	31.0%
	Supportive	16	38.1%
	Strongly Supportive	1	2.4%
Age	Younger Person (<45 years)	17	40.5%
	Older Person (>45 years)	25	59.5%
Children in the House	Yes	16	38.1%
	No	26	61.9%
Change in the Quality of Public Services in the Community in the Past 2 Years	Strongly Decreased	2	4.8%
	Decreased	11	26.2%
	No Change	18	42.9%
	Increased	11	26.2%
Valid		42	100.0%
Missing		1	
Total		43	

Table B-4.1.12 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	65.970			
Final	50.188	15.782	5	.007

Link function: Logit.

Table B-4.1.13 Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	25.946	35	.867
Deviance	27.374	35	.818

Link function: Logit.

Table B-4.1.14 Pseudo R-Square

Cox and Snell	.313
Nagelkerke	.335
McFadden	.137

Link function: Logit.

Table B-4.1.15 Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[L8KM = 1]	-3.641	.944	14.892	1	.000	-5.490	-1.792
	[L8KM = 2]	-2.595	.841	9.522	1	.002	-4.243	-.947
	[L8KM = 3]	-.821	.745	1.214	1	.270	-2.281	.639
	[L8KM = 4]	2.989	1.188	6.331	1	.012	.661	5.318
Location	[AGE=1]	.740	.993	.554	1	.456	-1.207	2.686
	[AGE=2]	0[a]	.	.	0	.	.	.
	[CHILDREN=1]	-1.829	1.034	3.131	1	.077	-3.855	.197
	[CHILDREN=2]	0[a]	.	.	0	.	.	.
	[PUSEQ20=1]	-3.710	1.762	4.432	1	.035	-7.164	-.256
	[PUSEQ20=2]	-2.376	.915	6.744	1	.009	-4.168	-.583
	[PUSEQ20=3]	-.231	.782	.087	1	.767	-1.764	1.301
	[PUSEQ20=4]	0[a]	.	.	0	.	.	.

Link function: Logit.

[a] This parameter is set to zero because it is redundant.

Ordinal Regression for Landfill Distance

MODEL No. 4

Table B-4.1.16 Case Processing Summary

		N	Marginal Percentage
8 km Landfill Distance	Strongly Opposed	6	14.3%
	Opposed	6	14.3%
	Neither Opposed nor Supportive	13	31.0%
	Supportive	16	38.1%
	Strongly Supportive	1	2.4%
Children in the House	Yes	16	38.1%
	No	26	61.9%
Change in the Quality of Public Services in the Community in the Past 2 Years	Strongly Decreased	2	4.8%
	Decreased	11	26.2%
	No Change	18	42.9%
	Increased	11	26.2%
Valid		42	100.0%
Missing		1	
Total		43	

Table B-4.1.17 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	60.327			
Final	45.160	15.167	4	.004

Link function: Logit.

Table B-4.1.18 Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	19.728	24	.712
Deviance	20.315	24	.679

Link function: Logit.

Table B-4.1.19 Pseudo R-Square

Cox and Snell	.303
Nagelkerke	.324
McFadden	.131

Link function: Logit.

Table B-4.1.20 Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[L8KM = 1]	-3.629	.938	14.972	1	.000	-5.466	-1.791
	[L8KM = 2]	-2.577	.833	9.558	1	.002	-4.210	-.943
	[L8KM = 3]	-.830	.734	1.279	1	.258	-2.268	.608
	[L8KM = 4]	2.941	1.190	6.110	1	.013	.609	5.274
Location	[CHILDREN=1]	-1.265	.658	3.692	1	.055	-2.554	3.E-02
	[CHILDREN=2]	0[a]	.	.	0	.	.	.
	[PUSEQ20=1]	-3.270	1.583	4.269	1	.039	-6.373	-.168
	[PUSEQ20=2]	-2.281	.897	6.466	1	.011	-4.040	-.523
	[PUSEQ20=3]	-.186	.774	.058	1	.810	-1.704	1.331
	[PUSEQ20=4]	0[a]	.	.	0	.	.	.

Link function: Logit.

[a] This parameter is set to zero because it is redundant.

Ordinal Regression for Airport Distance

MODEL No. 1

Table B-4.1.21 Case Processing Summary

		N	Marginal Percentage
8 km Airport Distance	Strongly Opposed	7	17.1%
	Opposed	10	24.4%
	Neither Opposed nor Supportive	10	24.4%
	Supportive	12	29.3%
	Strongly Supportive	2	4.9%
Present Unbearable Environmental Conditions in the Community	I Agree	3	7.3%
	Neither I Agree Nor Disagree	8	19.5%
	I Disagree	30	73.2%
Very Concerned About the Environment in the Community	I Agree	33	80.5%
	Neither I Agree Nor Disagree	5	12.2%
	I Disagree	3	7.3%
Change in the Quality of Public Services in the Community in the Past 2 Years	Strongly Decreased	2	4.9%
	Decreased	10	24.4%
	No Change	18	43.9%
	Increased	11	26.8%
Valid		41	100.0%
Missing		2	
Total		43	

Table B-4.1.22 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	70.199			
Final	60.838	9.361	7	.228

Link function: Logit.

Table B-4.1.23 Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	33.707	45	.892
Deviance	32.549	45	.917

Link function: Logit.

Table B-4.1.24 Pseudo R-Square

Cox and Snell	.204
Nagelkerke	.215
McFadden	.076

Link function: Logit.

Table B-4.1.25 Parameter Estimates

							95% Confidence Interval	
		Estimate	Std. Error	Wald	df	Sig.	Lower Bound	Upper Bound
Threshold	[A8KM = 1]	-2.574	1.242	4.293	1	.038	-5.009	-.139
	[A8KM = 2]	-1.155	1.185	.949	1	.330	-3.477	1.168
	[A8KM = 3]	1.2E-02	1.168	.000	1	.992	-2.278	2.301
	[A8KM = 4]	2.550	1.331	3.669	1	.055	-.059	5.159
Location	[ENCOQ6=1]	1.912	1.299	2.167	1	.141	-.634	4.457
	[ENCOQ6=2]	1.207	.814	2.198	1	.138	-.389	2.803
	[ENCOQ6=3]	0[a]	.	.	0	.	.	.
	[ENCOQ9=1]	-.954	1.145	.695	1	.405	-3.198	1.290
	[ENCOQ9=2]	.445	1.341	.110	1	.740	-2.183	3.073
	[ENCOQ9=3]	0[a]	.	.	0	.	.	.
	[PUSEQ20=1]	-3.209	1.878	2.919	1	.088	-6.889	.472
	[PUSEQ20=2]	-.760	.836	.827	1	.363	-2.397	.878
	[PUSEQ20=3]	-.178	.738	.058	1	.809	-1.625	1.268
	[PUSEQ20=4]	0[a]	.	.	0	.	.	.

Link function: Logit.

[a] This parameter is set to zero because it is redundant.

SECTION B-4 ORDINAL REGRESSION MODELS FOR THE VILLAGE OF BARONS

Ordinal Regression for Landfill Distance

MODEL No. 1

Table B-4.2.1 Case Processing Summary

		N	Marginal Percentage
8 km Landfill Distance	Strongly Opposed	3	25.0%
	Opposed	1	8.3%
	Neither Opposed nor Supportive	2	16.7%
	Supportive	5	41.7%
	Strongly Supportive	1	8.3%
Age	Younger Person (<45 years)	4	33.3%
	Older Person (>45 years)	8	66.7%
Children in the House	Yes	4	33.3%
	No	8	66.7%
Decrease in the Quality of the Environment in the Community in Recent Times	I Agree	5	41.7%
	Neither I Agree nor Disagree	1	8.3%
	I Disagree	6	50.0%
Very Concerned About the Global Environment	I Agree	10	83.3%
	Neither I Agree Nor Disagree	2	16.7%
Very Concerned About the Environment in the Community	I Agree	9	75.0%
	Neither I Agree Nor Disagree	3	25.0%
Change in the Quality of Public Services in the Community in the Past 2 Years	Decreased	4	33.3%
	No Change	7	58.3%
	Increased	1	8.3%
Valid		12	100.0%
Missing		1	
Total		13	

Table B-4.2.2 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	32.793			
Final	.000	32.793	7	.000

Link function: Logit.

Table B-4.2.3 Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	13.980	33	.998
Deviance	12.275	33	1.000

Link function: Logit.

Table B-4.2.4 Pseudo R-Square

Cox and Snell	.935
Nagelkerke	.992
McFadden	.959

Link function: Logit.

Table B-4.2.5 Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[L8KM = 1]	-31.806	281.422	.013	1	.910	-583.38	519.772
	[L8KM = 2]	-30.923	281.422	.012	1	.913	-582.50	520.654
	[L8KM = 3]	-29.267	281.420	.011	1	.917	-580.84	522.307
	[L8KM = 4]	-5.979	246.848	.001	1	.981	-489.79	477.834
Location	[AGE=1]	-13.551	173.036	.006	1	.938	-352.69	325.592
	[AGE=2]	0[a]	.	.	0	.	.	.
	[CHILDREN=1]	0[a]	.	.	0	.	.	.
	[CHILDREN=2]	0[a]	.	.	0	.	.	.
	[ENCOQ5=1]	-12.994	173.031	.006	1	.940	-352.13	326.141
	[ENCOQ5=2]	-12.588	173.046	.005	1	.942	-351.75	326.575
	[ENCOQ5=3]	0[a]	.	.	0	.	.	.
	[GLOBALQ8=1]	-4.073	194.496	.000	1	.983	-385.28	377.133
	[GLOBALQ8=2]	0[a]	.	.	0	.	.	.
	[ENCOQ9=1]	-17.067	97.568	.031	1	.861	-208.30	174.162
	[ENCOQ9=2]	0[a]	.	.	0	.	.	.
	[PUSEQ20=2]	3.634	246.858	.000	1	.988	-480.20	487.467
	[PUSEQ20=3]	2.441	246.857	.000	1	.992	-481.39	486.273
	[PUSEQ20=4]	0[a]	.	.	0	.	.	.

Link function: Logit.

[a] This parameter is set to zero because it is redundant.

Ordinal Regression for Landfill Distance

MODEL No. 2

Table B-4.2.6 Case Processing Summary

		N	Marginal Percentage
8 km Landfill Distance	Strongly Opposed	3	25.0%
	Opposed	1	8.3%
	Neither Opposed nor Supportive	2	16.7%
	Supportive	5	41.7%
	Strongly Supportive	1	8.3%
Decrease in the Quality of the Environment in the Community in Recent Times	I Agree	5	41.7%
	Neither I Agree nor Disagree	1	8.3%
	I Disagree	6	50.0%
Very Concerned About the Global Environment	I Agree	10	83.3%
	Neither I Agree Nor Disagree	2	16.7%
Very Concerned About the Environment in the Community	I Agree	9	75.0%
	Neither I Agree Nor Disagree	3	25.0%
Change in the Quality of Public Services in the Community in the Past 2 Years	Decreased	4	33.3%
	No Change	7	58.3%
	Increased	1	8.3%
Valid		12	100.0%
Missing		1	
Total		13	

Table B-4.2.7 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	30.020			
Final	.000	30.020	7	.000

Link function: Logit.

Table B-4. 2.8 Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	10.985	25	.993
Deviance	11.942	25	.987

Link function: Logit.

Table B-4. 2.9 Pseudo R-Square

Cox and Snell	.918
Nagelkerke	.975
McFadden	.878

Link function: Logit.

Table B-4.2.10 Parameter Estimates

							95% Confidence Interval	
		Estimate	Std. Error	Wald	df	Sig.	Lower Bound	Upper Bound
Threshold	[L8KM = 1]	-40.151	16836	.000	1	.998	-33038	32957
	[L8KM = 2]	-39.579	16836	.000	1	.998	-33037	32958
	[L8KM = 3]	-38.328	16836	.000	1	.998	-33036	32959
	[L8KM = 4]	-.436	13003	.000	1	1.000	-25485	25485
Location	[ENCOQ5=1]	-18.781	19773	.000	1	.999	-38772	38735
	[ENCOQ5=2]	.443	2.298	.037	1	.847	-4.061	4.946
	[ENCOQ5=3]	0[a]	.	.	0	.	.	.
	[GLOBALQ8=1]	-19.375	10636	.000	1	.999	-20866	20827
	[GLOBALQ8=2]	0[a]	.	.	0	.	.	.
	[ENCOQ9=1]	-38.156	18281	.000	1	.998	-35868	35791
	[ENCOQ9=2]	0[a]	.	.	0	.	.	.
	[PUSEQ20=2]	18.135	19773	.000	1	.999	-38736	38772
	[PUSEQ20=3]	18.781	19773	.000	1	.999	-38735	38772
	[PUSEQ20=4]	0[a]	.	.	0	.	.	.
	[ENCOQ5=1] * [ENCOQ9=1]	17.801	19773	.000	1	.999	-38736	38771
	[ENCOQ5=1] * [ENCOQ9=2]	0[a]	.	.	0	.	.	.
	[ENCOQ5=2] * [ENCOQ9=1]	0[a]	.	.	0	.	.	.
	[ENCOQ5=3] * [ENCOQ9=1]	0[a]	.	.	0	.	.	.
	[ENCOQ5=3] * [ENCOQ9=2]	0[a]	.	.	0	.	.	.

Link function: Logit.

[a] This parameter is set to zero because it is redundant.

Ordinal Regression for Airport Distance

MODEL No. 1

Table B-4.2.11 Case Processing Summary

		N	Marginal Percentage
8 km Airport Distance	Strongly Opposed	3	23.1%
	Opposed	3	23.1%
	Neither Opposed nor Supportive	2	15.4%
	Supportive	4	30.8%
	Strongly Supportive	1	7.7%
Present Unbearable Environmental Conditions in the Community	I Agree	1	7.7%
	Neither I Agree Nor Disagree	1	7.7%
	I Disagree	11	84.6%
Very Concerned About the Environment in the Community	I Agree	10	76.9%
	Neither I Agree Nor Disagree	3	23.1%
Change in the Quality of Public Services in the Community in the Past 2 Years	Decreased	4	30.8%
	No Change	8	61.5%
	Increased	1	7.7%
Valid		13	100.0%
Missing		0	
Total		13	

Table B-4.2.12 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	27.870			
Final	.000	27.870	5	.000

Link function: Logit.

Table B-4. 2.13 Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	4.518	15	.995
Deviance	5.401	15	.988

Link function: Logit.

Table B-4.2.14 Pseudo R-Square

Cox and Snell	.883
Nagelkerke	.927
McFadden	.703

Link function: Logit.

Table B-4.2.15 Parameter Estimates

							95% Confidence Interval	
		Estimate	Std. Error	Wald	df	Sig.	Lower Bound	Upper Bound
Threshold	[A8KM = 1]	-20.524	5209.7	.000	1	.997	-10231	10190
	[A8KM = 2]	-18.945	5209.7	.000	1	.997	-10230	10192
	[A8KM = 3]	-17.396	5209.7	.000	1	.997	-10228	10193
	[A8KM = 4]	17.446	5298.2	.000	1	.997	-10367	10402
Location	[ENCOQ6=1]	20.071	5209.7	.000	1	.997	-10191	10231
	[ENCOQ6=2]	1.658	2.173	.582	1	.445	-2.601	5.917
	[ENCOQ6=3]	0[a]	.	.	0	.	.	.
	[ENCOQ9=1]	-37.517	6067.5	.000	1	.995	-11930	11855
	[ENCOQ9=2]	0[a]	.	.	0	.	.	.
	[PUSEQ20=2]	17.689	5298.2	.000	1	.997	-10366	10402
	[PUSEQ20=3]	17.446	5298.2	.000	1	.997	-10367	10402
	[PUSEQ20=4]	0[a]	.	.	0	.	.	.

Link function: Logit.

[a] This parameter is set to zero because it is redundant.

SECTION B-4 ORDINAL REGRESSION MODELS FOR THE VILLAGE OF NOBLEFORD

Ordinal Regression for Landfill Distance

MODEL No. 1

Table B-4.3.1 Case Processing Summary

		N	Marginal Percentage
8 km Landfill Distance	Strongly Opposed	1	7.7%
	Opposed	3	23.1%
	Neither Opposed nor Supportive	5	38.5%
	Supportive	4	30.8%
Age	Younger Person (<45 years)	7	53.8%
	Older Person (>45 years)	6	46.2%
Children in the House	Yes	6	46.2%
	No	7	53.8%
Decrease in the Quality of the Environment in the Community in Recent Times	I Agree	6	46.2%
	Neither I Agree nor Disagree	3	23.1%
	I Disagree	4	30.8%
Very Concerned About the Global Environment	I Agree	11	84.6%
	Neither I Agree Nor Disagree	2	15.4%
Very Concerned About the Environment in the Community	I Agree	11	84.6%
	Neither I Agree Nor Disagree	1	7.7%
	I Disagree	1	7.7%
Change in the Quality of Public Services in the Community in the Past 2 Years	Strongly Decreased	2	15.4%
	Decreased	1	7.7%
	No Change	8	61.5%
	Increased	2	15.4%
Valid		13	100.0%
Missing		1	
Total		14	

Table 3.2 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	31.526			
Final	.000	31.526	10	.000

Link function: Logit.

Table B-4.3.3 Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	7.000	23	.999
Deviance	8.376	23	.998

Link function: Logit.

Table B-4.3.4 Pseudo R-Square

Cox and Snell	.912
Nagelkerke	.990
McFadden	.958

Link function: Logit.

Table B-4.3.5 Parameter Estimates

							95% Confidence Interval	
		Estimate	Std. Error	Wald	df	Sig.	Lower Bound	Upper Bound
Threshold	[L8KM = 1]	58.516	1490.7	.002	1	.969	-2863.3	2980.3
	[L8KM = 2]	82.791	1529.5	.003	1	.957	-2915.0	3080.5
	[L8KM = 3]	86.375	1529.5	.003	1	.955	-2911.4	3084.1
Location	[AGE=1]	-37.333	649.244	.003	1	.954	-1309.8	1235.2
	[AGE=2]	0[a]	.	.	0	.	.	.
	[CHILDREN=1]	23.433	479.896	.002	1	.961	-917.15	964.012
	[CHILDREN=2]	0[a]	.	.	0	.	.	.
	[ENCOQ5=1]	-2.E-05	2.673	.000	1	1.000	-5.239	5.239
	[ENCOQ5=2]	75.051	1195.9	.004	1	.950	-2268.8	2418.9
	[ENCOQ5=3]	0[a]	.	.	0	.	.	.
	[GLOBALQ8=1]	61.150	1089.9	.003	1	.955	-2074.9	2197.2
	[GLOBALQ8=2]	0[a]	.	.	0	.	.	.
	[ENCOQ9=1]	-2.E-09	3.087	.000	1	1.000	-6.050	6.050
	[ENCOQ9=2]	15.544	968.853	.000	1	.987	-1883.4	1914.5
	[ENCOQ9=3]	0[a]	.	.	0	.	.	.
	[PUSEQ20=1]	22.894	746.362	.001	1	.976	-1439.9	1485.7
	[PUSEQ20=2]	98.484	1622.6	.004	1	.952	-3081.7	3278.7
	[PUSEQ20=3]	23.433	479.906	.002	1	.961	-917.17	964.032
	[PUSEQ20=4]	0[a]	.	.	0	.	.	.

Link function: Logit.

[a] This parameter is set to zero because it is redundant.

Ordinal Regression for Landfill Distance

MODEL No. 2

Table B-4.3.6 Case Processing Summary

		N	Marginal Percentage
8 km Landfill Distance	Strongly Opposed	1	7.7%
	Opposed	3	23.1%
	Neither Opposed nor Supportive	5	38.5%
	Supportive	4	30.8%
Decrease in the Quality of the Environment in the Community in Recent Times	I Agree	6	46.2%
	Neither I Agree nor Disagree	3	23.1%
	I Disagree	4	30.8%
Very Concerned About the Global Environment	I Agree	11	84.6%
	Neither I Agree Nor Disagree	2	15.4%
Very Concerned About the Environment in the Community	I Agree	11	84.6%
	Neither I Agree Nor Disagree	1	7.7%
	I Disagree	1	7.7%
Change in the Quality of Public Services in the Community in the Past 2 Years	Strongly Decreased	2	15.4%
	Decreased	1	7.7%
	No Change	8	61.5%
	Increased	2	15.4%
Valid		13	100.0%
Missing		1	
Total		14	

Table B-4.3.7 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	28.753			
Final	11.944	16.809	8	.032

Link function: Logit.

Table B-4.3.8 Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	6.264	19	.997
Deviance	7.785	19	.989

Link function: Logit.

Table B-4.3.9 Pseudo R-Square

Cox and Snell	.726
Nagelkerke	.788
McFadden	.511

Link function: Logit.

Table B-4.3.10 Parameter Estimates

							95% Confidence Interval	
		Estimate	Std. Error	Wald	df	Sig.	Lower Bound	Upper Bound
Threshold	[L8KM = 1]	-3.871	113378	.000	1	1.000	******	222212
	[L8KM = 2]	19.672	98298	.000	1	1.000	******	192680
	[L8KM = 3]	23.026	98298	.000	1	1.000	******	192683
Location	[ENCOQ5=1]	-1.741	2.130	.668	1	.414	-5.916	2.435
	[ENCOQ5=2]	24.830	98298	.000	1	1.000	******	192685
	[ENCOQ5=3]	0[a]	.	.	0	.	.	.
	[GLOBALQ8=1]	24.830	98298	.000	1	1.000	******	192685
	[GLOBALQ8=2]	0[a]	.	.	0	.	.	.
	[ENCOQ9=1]	-1.741	2.603	.447	1	.504	-6.842	3.361
	[ENCOQ9=2]	23.695	.000	.	1	.	23.695	23.695
	[ENCOQ9=3]	0[a]	.	.	0	.	.	.
	[PUSEQ20=1]	-25.220	56498	.000	1	1.000	******	110709
	[PUSEQ20=2]	23.090	98298	.000	1	1.000	******	192683
	[PUSEQ20=3]	-1.741	2.603	.447	1	.504	-6.842	3.361
	[PUSEQ20=4]	0[a]	.	.	0	.	.	.

Link function: Logit.

[a] This parameter is set to zero because it is redundant.

Ordinal Regression for Airport Distance

MODEL No. 1

Table B-4.3.11 Case Processing Summary

		N	Marginal Percentage
8 km Airport Distance	Strongly Opposed	3	25.0%
	Opposed	3	25.0%
	Neither Opposed nor Supportive	4	33.3%
	Supportive	1	8.3%
	Strongly Supportive	1	8.3%
Present Unbearable Environmental Conditions in the Community	I Agree	1	8.3%
	Neither I Agree Nor Disagree	1	8.3%
	I Disagree	10	83.3%
Very Concerned About the Environment in the Community	I Agree	11	91.7%
	I Disagree	1	8.3%
Change in the Quality of Public Services in the Community in the Past 2 Years	Strongly Decreased	2	16.7%
	Decreased	1	8.3%
	No Change	7	58.3%
	Increased	2	16.7%
Valid		12	100.0%
Missing		2	
Total		14	

Table B-4.3.12 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	29.373			
Final	19.639	9.733	6	.136

Link function: Logit.

Table B-4.3.13 Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	20.350	18	.313
Deviance	16.128	18	.584

Link function: Logit.

Table B-4.3.14 Pseudo R-Square

Cox and Snell	.556
Nagelkerke	.586
McFadden	.275

Link function: Logit.

Table B-4.3.15 Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[A8KM = 1]	22.194	1.711	168.185	1	.000	18.840	25.548
	[A8KM = 2]	24.174	1.380	306.641	1	.000	21.468	26.880
	[A8KM = 3]	26.597	1.516	307.973	1	.000	23.627	29.568
	[A8KM = 4]	27.618	1.795	236.855	1	.000	24.101	31.136
Location	[ENCOQ6=1]	23.618	81944	.000	1	1.000	******	160632
	[ENCOQ6=2]	2.638	2.205	1.431	1	.232	-1.684	6.960
	[ENCOQ6=3]	0[a]	.	.	0	.	.	.
	[ENCOQ9=1]	24.904	.000	.	1	.	24.904	24.904
	[ENCOQ9=3]	0[a]	.	.	0	.	.	.
	[PUSEQ20=1]	-25.337	81944	.000	1	1.000	******	160583
	[PUSEQ20=2]	.482	2.331	.043	1	.836	-4.086	5.050
	[PUSEQ20=3]	-.434	1.582	.075	1	.784	-3.535	2.667
	[PUSEQ20=4]	0[a]	.	.	0	.	.	.

Link function: Logit.

[a] This parameter is set to zero because it is redundant.

SECTION B-4 ORDINAL REGRESSION MODELS FOR THE TOWN OF PICTURE BUTTE

Ordinal Regression for Landfill Distance

MODEL No. 1

Table B-4.4.1 Case Processing Summary

		N	Marginal Percentage
8 km Landfill Distance	Strongly Opposed	1	6.3%
	Opposed	2	12.5%
	Neither Opposed nor Supportive	6	37.5%
	Supportive	7	43.8%
Age	Younger Person (<45 years)	6	37.5%
	Older Person (>45 years)	10	62.5%
Children in the House	Yes	6	37.5%
	No	10	62.5%
Decrease in the Quality of the Environment in the Community in Recent Times	I Agree	7	43.8%
	Neither I Agree nor Disagree	1	6.3%
	I Disagree	8	50.0%
Very Concerned About the Global Environment	I Agree	13	81.3%
	Neither I Agree Nor Disagree	3	18.8%
Very Concerned About the Environment in the Community	I Agree	12	75.0%
	Neither I Agree Nor Disagree	2	12.5%
	I Disagree	2	12.5%
Change in the Quality of Public Services in the Community in the Past 2 Years	Decreased	5	31.3%
	No Change	3	18.8%
	Increased	8	50.0%
Valid		16	100.0%
Missing		0	
Total		16	

Table B-4.4.2 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	34.434			
Final	8.714	25.719	9	.002

Link function: Logit.

Table B-4.4.3 Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	5.139	24	1.000
Deviance	5.942	24	1.000

Link function: Logit.

Table B-4.4.4 Pseudo R-Square

Cox and Snell	.800
Nagelkerke	.886
McFadden	.691

Link function: Logit.

Table B-4.4.5 Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[L8KM = 1]	-55.154	843.281	.004	1	.948	-1708.0	1597.6
	[L8KM = 2]	-53.225	843.279	.004	1	.950	-1706.0	1599.6
	[L8KM = 3]	-32.157	773.436	.002	1	.967	-1548.1	1483.8
Location	[AGE=1]	33.160	665.841	.002	1	.960	-1271.9	1338.2
	[AGE=2]	0[a]	.	.	0	.	.	.
	[CHILDREN=1]	-64.657	796.049	.007	1	.935	-1624.9	1495.6
	[CHILDREN=2]	0[a]	.	.	0	.	.	.
	[ENCOQ5=1]	1.973	1.673	1.390	1	.238	-1.307	5.252
	[ENCOQ5=2]	44.131	713.005	.004	1	.951	-1353.3	1441.6
	[ENCOQ5=3]	0[a]	.	.	0	.	.	.
	[GLOBALQ8=1]	4.177	695.079	.000	1	.995	-1358.2	1366.5
	[GLOBALQ8=2]	0[a]	.	.	0	.	.	.
	[ENCOQ9=1]	-26.356	438.748	.004	1	.952	-886.29	833.574
	[ENCOQ9=2]	-11.282	817.220	.000	1	.989	-1613.0	1590.4
	[ENCOQ9=3]	0[a]	.	.	0	.	.	.
	[PUSEQ20=2]	-32.197	339.220	.009	1	.924	-697.06	632.661
	[PUSEQ20=3]	7.113	.000	.	1	.	7.113	7.113
	[PUSEQ20=4]	0[a]	.	.	0	.	.	.

Link function: Logit.

[a] This parameter is set to zero because it is redundant.

Ordinal Regression for Landfill Distance

MODEL No. 2

Table B-4.4.6 Case Processing Summary

		N	Marginal Percentage
8 km Landfill Distance	Strongly Opposed	1	6.3%
	Opposed	2	12.5%
	Neither Opposed nor Supportive	6	37.5%
	Supportive	7	43.8%
Decrease in the Quality of the Environment in the Community in Recent Times	I Agree	7	43.8%
	Neither I Agree nor Disagree	1	6.3%
	I Disagree	8	50.0%
Very Concerned About the Global Environment	I Agree	13	81.3%
	Neither I Agree Nor Disagree	3	18.8%
Very Concerned About the Environment in the Community	I Agree	12	75.0%
	Neither I Agree Nor Disagree	2	12.5%
	I Disagree	2	12.5%
Change in the Quality of Public Services in the Community in the Past 2 Years	Decreased	5	31.3%
	No Change	3	18.8%
	Increased	8	50.0%
Valid		16	100.0%
Missing		0	
Total		16	

Table B-4.4.7 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	28.653			
Final	14.248	14.405	7	.044

Link function: Logit.

Table B-4.4.8 Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	9.375	20	.978
Deviance	7.892	20	.993

Link function: Logit.

Table B-4.4.9 Pseudo R-Square

Cox and Snell	.594
Nagelkerke	.658
McFadden	.387

Link function: Logit.

Table B-4.4.10 Parameter Estimates

							95% Confidence Interval	
		Estimate	Std. Error	Wald	df	Sig.	Lower Bound	Upper Bound
Threshold	[L8KM = 1]	-23.051	5429.7	.000	1	.997	-10665	10619
	[L8KM = 2]	-21.017	5429.7	.000	1	.997	-10663	10621
	[L8KM = 3]	-17.925	5429.7	.000	1	.997	-10660	10624
Location	[ENCOQ5=1]	3.375	1.746	3.737	1	.053	-.047	6.797
	[ENCOQ5=2]	1.712	2.550	.451	1	.502	-3.286	6.710
	[ENCOQ5=3]	0[a]	.	.	0	.	.	.
	[GLOBALQ8=1]	-1.363	5429.7	.000	1	1.000	-10643	10641
	[GLOBALQ8=2]	0[a]	.	.	0	.	.	.
	[ENCOQ9=1]	-19.820	.000	.	1	.	-19.820	-19.820
	[ENCOQ9=2]	-19.471	5429.7	.000	1	.997	-10662	10623
	[ENCOQ9=3]	0[a]	.	.	0	.	.	.
	[PUSEQ20=2]	-1.234	1.307	.891	1	.345	-3.796	1.328
	[PUSEQ20=3]	20.834	7149.2	.000	1	.998	-13991	14033
	[PUSEQ20=4]	0[a]	.	.	0	.	.	.

Link function: Logit.

[a] This parameter is set to zero because it is redundant.

Ordinal Regression for Airport Distance

MODEL No. 1

Table B-4.4.11 Case Processing Summary

		N	Marginal Percentage
8 km Airport Distance	Strongly Opposed	1	6.3%
	Opposed	4	25.0%
	Neither Opposed nor Supportive	4	25.0%
	Supportive	7	43.8%
Present Unbearable Environmental Conditions in the Community	I Agree	1	6.3%
	Neither I Agree Nor Disagree	6	37.5%
	I Disagree	9	56.3%
Very Concerned About the Environment in the Community	I Agree	12	75.0%
	Neither I Agree Nor Disagree	2	12.5%
	I Disagree	2	12.5%
Change in the Quality of Public Services in the Community in the Past 2 Years	Decreased	5	31.3%
	No Change	3	18.8%
	Increased	8	50.0%
Valid		16	100.0%
Missing		0	
Total		16	

Table B-4.4.12 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	31.557			
Final	23.909	7.648	6	.265

Link function: Logit.

Table B-4.4.13 Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	16.817	21	.722
Deviance	17.789	21	.662

Link function: Logit.

Table B-4.4.14 Pseudo R-Square

Cox and Snell	.380
Nagelkerke	.416
McFadden	.195

Link function: Logit.

Table B-4.4.15 Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[A8KM = 1]	-23.270	1.696	188.213	1	.000	-26.595	-19.946
	[A8KM = 2]	-20.775	1.809	131.868	1	.000	-24.321	-17.229
	[A8KM = 3]	-19.321	1.917	101.541	1	.000	-23.080	-15.563
Location	[ENCOQ6=1]	.722	2.135	.114	1	.735	-3.462	4.906
	[ENCOQ6=2]	.563	1.186	.225	1	.635	-1.762	2.888
	[ENCOQ6=3]	0[a]	.	.	0	.	.	.
	[ENCOQ9=1]	-19.873	1.918	107.337	1	.000	-23.632	-16.113
	[ENCOQ9=2]	-22.800	.000	.	1	.	-22.800	-22.800
	[ENCOQ9=3]	0[a]	.	.	0	.	.	.
	[PUSEQ20=2]	-.897	1.206	.553	1	.457	-3.260	1.466
	[PUSEQ20=3]	1.556	1.861	.699	1	.403	-2.091	5.203
	[PUSEQ20=4]	0[a]	.	.	0	.	.	.

Link function: Logit.

[a] This parameter is set to zero because it is redundant.

APPENDIX B

SECTION B-5

TABLE B-5.1 NEWSPAPER ARTICLES SIGNIFICANT FOR THE RESEARCH

THE LETHBRIDGE HERALD

Number	Name of Article	Date of Publication	Page	Description
	CITY OF LETHBRIDGE ARTICLES			
	Crime Articles			
	Arsonist Articles			
152	Investigators on Hot Trail of City Arsonist	Saturday November 18th., 1995	A-1	-
153	Number 11 for Arsonist	Tuesday November 21st., 1995	A-4	-
206	Firebug Still at Large in Lethbridge	Wednesday March 6th., 1996	A-3	Arsonist
	Cab Driver Attack Articles			
209	Culprits Abduct Cabbie at Knife Point	Thursday March 7th., 1996	A-1	-
211	Former Cabbie Relieves Terrifying Experience	Saturday March 9th., 1996	A-3	-
	Home Invasion Issue			
216	Home Invasion	Monday April 8th., 1996	A-1	Thieves Severely Beat City Man, Tie Up Woman, Child During Robbery
217	Home Invasion Shocks Quiet Neighborhood	Tuesday April 9th., 1996	A-1	-
225	Home Invasion Suspect Arrest	Wednesday April 17th., 1996	A-1	-
231	Invasion Suspect Still in Slammer	Thursday May 2nd., 1996	A-3	-
237	Antiporn Support Appreciated	Saturday May 11th., 1996	A-4	Letter to the Editor (Not in Favor)
	Sex Assault Issue			
312	Province, Calnan Hit With Suit on Sex Assault Incidents	Saturday September 21st., 1996	A-1	-
315	Calnan Petition on A Roll	Sunday September 22nd., 1996	A-3	-
	Murder Articles			
461	Husband Charged in Cold Lake Murder	Thursday August 7th., 1997	A-1	-
556	Victim's Employer, Colleagues Shocked by News of Her Death	Wednesday January 21st., 1998	A-1	Related to the Last One
557	Murder 'Horrific' Says Chief	Thursday January 22nd., 1998	A-1	Related to the Last One
615	Death on Dieppe	Friday April 24th., 1998	A-1	Did Macabre Murder Precede in Quiet East End
616	Dead Man a Convicted Murderer, in Trouble with Police for Years	Friday April 24th., 1998	A-1	-
617	Paulette Intended to Take a Day Off	Friday April 24th., 1998	A-1	-
618	Murder on the Boulevard. Dieppe Dig Yields Grisly Discovery: A Dismembered Body	Saturday April 25th., 1998	A-1	-
619	Dieppe Residents Hope Invasion Ends Soon	Monday April 27th., 1998	A-1	-
558	Murder Fuels Neighborhood Fears	Thursday January 22nd., 1998	A-1	Related to the Last One
	Teenagers with Murder Charges			
555	City Teens Face Murder Charges	Wednesday January 26th., 1998	A-1	-
562	Accused Teenage Killers to Have Psych Assessment	Thursday January 29th., 1998	A-1	-
582	Accused Teen Killer to Learn Fate Soon	Thursday March 19th., 1998	A-1	-
	Other Related Articles			
1	Charges Laid in Brake-in	Sunday April 2nd., 1995	-	-
15	Karaoke Machine Stolen During Break-in	Sunday April 9th., 1995	-	-
23	Joggers Shaken by Swerving Car	Friday April 14th., 1995	-	-
25	Judge Suspends Sentences	Friday April 21st., 1995	-	-
32	Thief Escapes with Cash from Morning Robbery	Thursday April 27th., 1995	-	-
130	Sex Trade Booming Downtown	Friday September 15th., 1995	A-3	-
157	Arrest of City Man Follows Failed Abduction Attempt	Thursday December 14th., 1995	A-3	-
204	Young Offenders Graduate to Big Time	Monday February 19th., 1996	A-3	-
213	City Police Kept Busy with Rash of Brake-ins	Wednesday March 13th., 1996	A-1	-
222	Pizza Hut Worker Robbed at Gunpoint	Sunday April 14th., 1996	A-3	-
224	Dangerous Banditry	Tuesday April 16th., 1996	A-4	City Police Chasing Robbery Leads
228	Skirmishes Erupt in Anti-Porn War	Wednesday April 24th., 1996	A-3	-

Number	Name of Article	Date of Publication	Page	Description
249	Robbery planned, Warns Manager	Saturday June 1st., 1996	A-1	-
256	Robbers Beware	Wednesday June 5th., 1996	A-1	City Police Launches Initiative to Put a Stop to Robberies Hitting Lethbridge Business
258	Information on Break-ins Wanted	Thursday June 6th., 1996	A-2	-
276	City Crime Moves Up	Thursday August 1st., 1996	A-1	-
282	Week's Crimes Remind Us to Think Safe	Saturday August 19th., 1996	A-1	-
286	Three More Arrested in Mac's Hold Up	Monday August 19th., 1996	A-1	-
295	Woman Jailed for Role in Mac's Robbery	Friday August 30th., 1996	A-1	-
296	Thursday Busy Time for Thieves	Friday August 30th., 1996	A-2	-
299	Cops Nail Suspect in Warner Robbery	Monday September 9th., 1996	A-1	-
267	Robbery Team on the Go	Thursday June 20th., 1996	A-1	-
305	Knife Toting Bandit Doesn't Get His Snack	Saturday September 14th., 1996	A-1	-
306	Female Flower Seller Robbed	Monday September 16th., 1996	A-1	-
314	Judge Rejects 'Conditional Sentence' in Casino Robbery	Saturday September 21st., 1996	A-1	-
317	Phony Bank Inspector Slam Claims Another Victim	Tuesday September 24th., 1996	A-1	-
319	Ecstasy Not on Lethbridge Streets Yet	Saturday September 28th., 1996	A-1	-
323	City Man Beaten Up Three Teen Thugs	Sunday October 13th., 1996	-	-
324	Home Invasion Sparks Charges	Thursday October 17th., 1996	A-1	-
328	Robber Hits City Sub Store Last Night	Tuesday October 29th., 1996	A-1	-
330	Mystery Haunt Murder Scene	Wednesday October 30th., 1996	A-1	-
331	Police Piecing Shooting Puzzle	Thursday October 31st., 1996	A-1	-
337	City Bank Robbed, Suspect Captured	Thursday November 21st., 1996	A-1	-
338	Assailants to Spend Time in Jail for Stavely Attack	Thursday November 21st., 1996	A-1	-
341	Robbery Beatings Too Much for Cabbie	Tuesday November 26th., 1996	A-1	-
348	Police seek Suspect in Sexual Assault	Sunday December 8th., 1996	A-2	-
350	Two Men Nabbed in Chase	Tuesday December 31st., 1996	A-1	-
386	No Jail Time for Killing Intruder	Thursday April 10th., 1997	A-1	-
392	Robbery Suspect Still in Jail	Thursday May 1st., 1997	A-1	-
395	City Man Arrested in Home Invasion	Saturday May 3rd., 1997	A-1	-
396	Warrants Out for Third Man in Cardston Home Invasion	Monday May 5th., 1997	A-2	-
419	Cops Crush Prostitution	Wednesday June 25th., 1997	A-1	-
423	Arson-Related Charges Laid in Series of Spring Blazes	Wednesday July 9th., 1997	A-3	-
431	Hearing Schedule Into Alleged Murder Plot	Friday July 25th., 1997	-	-
548	Armed Robberies Dropped in '97	Saturday January 3rd., 1998	A-1	-
675	Curbing the Sex Trade	Saturday November 14th., 1998	-	Police Prostitution Stings Results in Alternative Measures Program
734	Seniors Wake Up to Aftermath of Downtown Vandalism Spree	Monday May 17th., 1999	A-1	-
755	"Busted " City Police Raid Scores Largest Cocaine Haul"	Tuesday June 29th., 1999	A-1	150 grams.
698	Pedophile Free While He Awaits Sentencing	Wednesday February 10th., 1999	-	-
	Pornography Bylaw Articles			
239	Pornography to be Debated Thursday	Monday May 13th., 1996	A-3	-
310	Petition Protests Sentence	Friday September 20th., 1996	A-1	Sexual Assault Term Focus on Demonstration
311	Petition Timing Strike a Chord	Friday 20th., 1996	A-13	(Negative)
649	Pondering Porn: Council Expected to Deal with New Rule for "XXX" Materials	Tuesday September 8th., 1998	A-1	-
652	City's Porn Bylaw Must Keep Abreast of Charter	Thursday September 10th., 1998	A-1	-
653	Tread Legally on Porn Bylaw	Thursday September 10th., 1998	A-6	-
660	City Wants Public Input on Proposed Porn Bylaw	Monday September 28th., 1998	A-1	-
661	Porn Bylaw Raises Tough Questions	Monday September 28th., 1998	A-6	-
662	XXX Dilemma: City Council Finds Porn Issue Proving A Tough Nut to Crack	Tuesday September 29th., 1998	A-1	-
663	Anti-porn Laws Now on Books	Tuesday October 6th., 1998	-	City Now Has Three Bylaws Restricting XXX Access
665	City Construction Hits 10-Year High	Tuesday October 6th., 1998	-	-
669	Porn Bylaws: Thanks for Nothing	Monday October 12th., 1998	A-8	-

Number	Name of Article	Date of Publication	Page	Description
670	Porno the Ruination of Western Life	Monday October 12th., 1998	A-8	Letter to the Editor
733	New Porn Shop Kirts Bylaw	Friday May 14th., 1999	A-1	-
	Health Related Articles			
	St. Michael's Centre Issues			
112	St. Michel's Care Centre to Close Friday	Wednesday July 19th., 1995	A-2	-
126	Province O.K.s St. Michael's Care Facility	Friday September 8th., 1995	A-1	-
128	St. Mike's Shutdown Claims Fundraiser	Monday September 11th., 1995	A-3	Gift Shop Forced to Close Its Doors
283	20 Million Approved for New St. Michael's	Saturday August 17th., 1996	A-1	-
645	St. Mike's, Health Region at Odds over Blame for Staff Layoffs	Friday September 4th., 1998	A-1	-
658	St. Mike's Cuts from Top; More Slashing to Be Done	Thursday September 24th., 1998	A-1	-
679	St. Mike's Need Cash Transfusion	Friday December 4th., 1998	A-1	Hospital Project is $ 1.2 Million Over Budget
680	Don't Downsize St. Michael's	Saturday December 5th., 1998	A-6	Money Shortage
	Smoking Bylaw			
690	City's Tougher Smoking Bylaw Likely to Make Presence Felt	Thursday January 21st., 1999	A-3	-
691	Council Clear on Smoking Ban	Thursday January 21st., 1999	A-10	-
823	Reaction Mixed as No-Smoking Law Takes Effect	Monday January 3rd., 2000	A-1	-
824	Restaurants Need not Fear Bylaws Banning Smoking	Monday January 3rd., 2000	A-8	-
831	Smoking Bylaw a Church, Council Conspiracy	Thursday January 6th., 2000	A-6	Letter to the Editor
839	Smoking Bylaw Nothing to with Church	Tuesday January 11th., 2000	A-10	Letter to the Editor
840	Health, Not Religion, is the Issue	Tuesday January 11th., 2000	A-10	Letter to the Editor
841	Smokers, Have no Right to Poison Air of Others	Tuesday January 11th., 2000	A-10	Letter to the Editor
842	A Good Example	Tuesday January 11th., 2000	A-10	Letter to the Editor
843	Too Many Abused Freedoms	Tuesday January 11th., 2000	A-10	Letter to the Editor
844	Bylaw a Local Initiative	Tuesday January 11th., 2000	A-10	Letter to the Editor
845	Letter Writer Uninformed	Tuesday January 11th., 2000	A-10	Letter to the Editor
847	City Smoking Bylaw Unfair, Creates Second Class Citizens	Wednesday January 12th., 2000	A-6	Letter to the Editor
848	Untimely Funerals for Friends Who Smoke	Wednesday January 12th., 2000	A-6	Letter to the Editor
849	Noticeable Difference in the Air	Wednesday January 12th., 2000	A-6	Letter to the Editor (Smoking Bylaw)
853	Who Will Mourn the Tower?	Saturday January 15th., 2000	-	-
854	Smoking Bylaw No Biggie for City Restaurants	Saturday January 15th., 2000	-	-
857	Sadly, Some Have Missed the Point	Saturday January 15th., 2000	A-6	Editor (Smoking)
856	Smokers Are the Pushy Ones	Saturday January 15th., 2000	A-6	Letter to the Editor
859	Why All the Fuss About Smoking	Saturday January 15th., 2000	A-6	Letter to the Editor
860	Everyone Has the Right to Opinion	Saturday January 15th., 2000	A-6	Letter to the Editor
863	Even Smokers Will Have to Agree, City Bylaw	Wednesday January 19th., 2000	A-8	-
864	Is the Right Thing to Do	Wednesday January 19th., 2000	A-8	-
865	Smoking Kids Better than Pregnant Teens	Wednesday January 19th., 2000	A-8	-
866	Butt out in Enclosed Areas	Wednesday January 19th., 2000	A-8	-
867	When Addiction Take Over	Wednesday January 19th., 2000	A-8	-
868	Smoking Habit Killed Mother	Wednesday January 19th., 2000	A-8	-
870	Another Reason to Stop Smoking	Saturday January 22nd., 2000	A-6	Letter to the Editor
876	Smoking Law not Enforced	Tuesday January 25th., 2000	A-6	-
884	Other Town Also Have Non-Smoking Bylaws	Monday January 31st., 2000	A-6	Letter to the Editor
885	Logic Lacking in Smokers Argument	Tuesday February 1st., 2000	A-9	Letter to the Editor
886	Graphic Warnings Waste of Time	Tuesday February 1st., 2000	A-9	Letter to the Editor
887	Student Applauds Bylaw	Tuesday February 1st., 2000	A-9	Letter to the Editor
888	Restaurants Were Design for Eating	Tuesday February 1st., 2000	A-9	Letter to the Editor
889	Smoking Argument Cause for Concern	Tuesday February 1st., 2000	A-9	Letter to the Editor
890	Now is the Time to Focus on Drinking Drivers	Tuesday February 1st., 2000	A-9	Letter to the Editor
891	Self-Discipline Only Real Hope	Tuesday February 1st., 2000	A-9	Letter to the Editor
911	Don't Like Second Hand Smoke? Go to Nonsmoking Restaurant	Thursday February 17th., 2000	A-11	-
1026	All Quiet in Smoking Bylaw Front	Monday July 10th., 2000	A-1	-
	Other Related Articles			-
633	Geriatricians Leaving City	Saturday June 20th., 1998	A-1	-

Number	Name of Article	Date of Publication	Page	Description
718	Hiring for Good Health…	Wednesday March 17th., 1999	A-1	About Getting More Health Care Personnel
895	Lives at Risk Because of Ambulance Shortages	Monday February 7th., 2000	A-5	Letter to the Editor
952	Code Red Study Not Needed, Time for City Council to Act	Monday March 27th., 2000	A-6	-
964	Code Red: Council Looks at Solutions	Monday April 17th., 2000	A-1	Ambulance Services in the City of Lethbridge
				-
	Articles Related to Social Issues			-
	Poverty			-
815	Poverty an Issue in City	Tuesday December 7th., 1999	B-4	Lethbridge Has Higher Percentage of Poor than Several Alberta Cities
816	Poverty Report a Wake Up Call	Wednesday December 8th., 1999	A-10	Editor
	Low Income Housing			-
829	City Drops Commitment for Low-Income Housing	Thursday January 6th., 2000	A-1	
830	Housing Cut Was Just Cheap	Thursday January 6th., 2000	-	Editor
836	City Has an Obligation to Assist Low-Income Residents	Monday January 10th., 2000	A-3	-
	City Pools			-
1000	City Dives into Privatization Pools	Tuesday June 13th., 2000	A-1	-
1005	CUPE Sends Warning on Plan to Privatize City Pool Operations	Monday June 26th., 2000	A-1	-
1006	Privatizing City Pools a Mistake	Monday June 26th., 2000	A-8	Letter to the Editor
1007	Pool Safety Comes First	Monday June 26th., 2000	A-8	Letter to the Editor
1008	City to Contract Pool Work	Tuesday June 27th., 2000	A-1	45 Jobs Down the Drain, Victoria Firm to Take Over
1009	Staff Find Out the Hard Way	Tuesday June 27th., 2000	-	About Pools
1015	Privatizing City Pools a Mistake	Thursday June 29th., 2000	A-8	-
1017	B.C. Pool Rep. Disputes Claims by CUPE of Poor Management	Saturday July 1st., 2000	A-1	-
1019	City Employees Deserved Better Treatment	Saturday July 1st., 2000	A-8	Letter to the Editor
1062	Services Won't Change at Pools, Says Executive	Thursday September 7th., 2000	A-1	
	Other Related Articles		A-1	
821	City Land Purchase End of an Eyesore	Wednesday December 22nd., 1999	A-1	City's Clean Up of Seven Acres Should Mean a Prettier Sight for Sore Eyes
822	Valley Purchase the Right Thing	Thursday December 23rd., 1999	A-8	Editor
936	Free Kindergarten Coming Back	Monday March 13th., 2000	A-1	-
938	Hurrah for Kindergarten Support!	Monday March 13th., 2000	A-5	Editor Comment
954	No Schools Will Close	Wednesday March 29th., 2000	A-1	City of Lethbridge
1107	Decision on New Schools Delayed Until Next Week	Wednesday December 13th., 2000	A-1	-
1112	Planning Critical for New School	Saturday December 23rd., 2000	A-6	Letter to the Editor
739	The Future Looks Bright for Lethbridge	Wednesday June 2nd. 1999	A-3	Demographic Shifts Mean LCC Will Change to Accommodate Increases in Key Areas (City of Lethbridge)
778	Extra Cash on Way to School, Health	Wednesday September 1st., 1999	A-1	$3.1 Million is on Its Way to City Schools, but liberal MLA Says cash Doesn't Solve Problems with Budget
893	River Valley Our City's Special Jewel	Monday February 7th., 2000	A-1	-
1082	New Scenic Drive Roadway a Danger, Nearby Resident Tells City Council	Wednesday November 1st., 2000	A-3	-
				-
	Development Articles			-
	World Citizens Centre Issue			-
3	World Citizens Centre May Close Doors	Monday April 3rd., 1995	-	-
24	World City Center Struggling for Survival	Friday April 21st., 1995	-	-
138	New Life for World Citizens Centre	Monday October 2nd., 1995	A-3	-
212	Centresite Bought and Paid for	Monday March 11th., 1996	A-1	-
	Motel Magic Issue			
5	City Council Delays Decision on Proposed Motel Expansion	Tuesday April 4th., 1995	-	-
9	River Valley Fight Has Only Just Begun	Saturday April 8th., 1995	-	-
13	Geothecnical Report Deserves Council Study	Saturday April 8th., 1995	-	Magic Hotel

Number	Name of Article	Date of Publication	Page	Description
14	Council Considers Rezoning	Sunday April 9th., 1995	-	-
16	Way Paved for Motel Expansion	Tuesday April 11th., 1995	-	-
21	Motel Land Battle May not Be over Just Yet	Wednesday April 12th., 1995	-	-
55	Motel Magic Moves a Step Closer to Hillside Expansion	Tuesday June 6th., 1995	-	-
113	Three Weeks to Deadline for Motel Expansion	Wednesday July 26th., 1995	-	-
123	Motel Magic Expansion Gets Council's Blessing	Tuesday August 29th., 1995	A-1	-
129	Motel Magic Deal Clears Final Hurdle	Tuesday September 12th., 1995	A-3	-
140	River Valley Contributes to Healthy Environment	Tuesday October 3rd., 1995	A-4	Letter to the Editor
181	City Council Approves Motel Magic Changes	Tuesday January 30th., 1996	A-2	-
263	Motel Magic Addition Appear on Shaky Ground	Thursday June 13th., 1996	A-1	-
273	As if By Magic a Franchise Appears	Tuesday July 30th., 1996	A-3	-
373	City Motel Expansion No Longer in the Cards	Tuesday February 11th., 1997	A-11	-
	Sick Pool Issue			
10	Funds to Save Pool Won't Come Easy	Saturday April 8th., 1995	-	Letter to the Editor
11	Sick Pool Should Have Been Kept in Good Repair	Saturday April 8th., 1995	-	Letter to the Editor
12	Pool Figures Make Reader Sick	Saturday April 8th., 1995	-	Letter to the Editor
26	Pool Study Before Council	Sunday, April 23rd., 1995	-	-
28	Council Makes Waves by Rejecting Pool Plan	Tuesday April 25th., 1995	-	-
41	Pool Changes Eyed	Sunday May 7th., 1995	-	-
44	Council Defeats Bid to Close Fritz Pool	Tuesday May 9th., 1995	-	-
51	End Pool Controversy	Friday May 19th., 1995	-	Letter to the Editor
155	Fritz Swim More than Pastime	Saturday December 9th., 1995	-	Letter to the Editor
169	Pool Escapes Waterly Grave	Thursday January 13th., 1996	A-5	-
	Theatre Project			
17	Council Acts for Theatre Project	Tuesday April 11th., 1995	-	-
47	Theatre Lockout Suspended	Wednesday May 17th., 1995	-	-
	Japanese Delegation Visit			
109	Japanese Delegation to Visit the City	Friday July 14th., 1995	A-2	-
117	Japanese Officials Tour City	Saturday July 29th., 1995	A-1	-
	Construction Articles			
159	Home Construction Down Again in 95	Saturday January 6th., 1996	A-1	-
160	Economy Nails Lethbridge Construction	Tuesday January 9th., 1996	A-3	-
409	Building Goes Through Roof	Friday June 6th., 1997	A-1	(1997 Shaping Up as a Banner Year)
505	City Builders Hammering as Boom Year Continues	Thursday October 9th., 1997	A-1	-
313	City Home Builders Bring Home Top Honors	Saturday September 21st., 1996	A-1	-
553	New Home Business Gets Boost' Home Builders Association Part of a New Mortgage Drive	Wednesday January 21st., 1998	A-1	-
571	City Housing Boom to Continue, Experts Say	Saturday February 7th., 1998	-	CMHC Predicts 450 New Housing Will Built in Lethbridge in 1998
604	City Set for Another Booming Building Year	Tuesday April 7th., 1998	A-1	-
628	Construction Boom Continuing in City	Wednesday June 10th., 1998	A-1	-
641	Lethbridge Construction Building Up a Tornado	Wednesday August 12th., 1998	A-10	-
657	City Builders Confident of a Strong 1999	Saturday September 19th., 1998	B-6	-
727	City Construction on Record Pace Again	Wednesday April 14th., 1999	B-6	-
786	City Construction Records Poised to Fall	Friday September 10th., 1999	B-8	-
793	City Construction Work Tops $116 Million	Thursday October 7th., 1999	B-5	Assortment of Commercial Projects Help Boost Lethbridge's 1999 Total
819	City Still Breaking Records for Construction	Tuesday December 14th., 1999	A-1	-
838	Construction Flexes Muscle	Tuesday January 11th., 2000	A-10	-
898	New Home Construction Off to Good Start in 2000	Thursday February 10th., 2000	B-6	City of Lethbridge
930	Home Building Ahead of Last Year's Pace	Wednesday March 8th., 2000	B-5	-
931	Lots Plentiful for Builders as Housing Boom Continues	Wednesday March 8th., 2000	B-5	-
963	City Construction Tops $ 41 Million in First Quarter	Friday April 14th., 2000	B-8	-
976	Home Building to Keep Booming	Thursday May 4th., 2000	B-6	-
978	City Construction Remains Strong	Wednesday May 10th., 2000	B-6	-
1032	Construction's Slow, Steady in Lethbridge Area Centres	Thursday July 20th., 2000	B-6	-
1040	New Homes Lead Local Building Boom	Wednesday August 9th., 2000	B-6	-
573	Calgary Company Hired to Build Swimming Pool	Friday February 13th., 1998	A-4	Lethbridge City

Number	Name of Article	Date of Publication	Page	Description
623	City Planners Anticipate Growth	Saturday May 2nd., 1998	-	-
624	City Southern Slated for New Motel, Hotel	Tuesday June 2nd., 1998	A-1	-
626	Businessman Has Big Plans for Holiday Inn	Tuesday June 9th., 1998	B-6	-
636	Another Hotel for Our City? Well, Learn for Sure Today	Wednesday June 24th., 1998	-	-
817	Work Ready to Begin on New Downtown Hotel	Thursday December 9th., 1999	B-8	-
651	Costco Planning Major Expansion	Wednesday September 9th., 1998	B-6	-
695	Proposed City Bylaw to Target Eyesores	Monday February 8th., 1999	A-3	Council to Hear Plan for Architectural Limits
713	City Looks to Sunrise for Residential Growth	Tuesday March 9th., 1999	A-1	-
749	New Bridge Would Benefit All	Thursday June 24th., 1999	A-6	Letter to the Editor. Bridge in Whoop-Up Drive
855	Preparation Begins on New Foot Bridge	Saturday January 15th., 2000	-	-
879	Convention Centre Dream Still Alive	Thursday January 27th., 2000	A-1	City Has Seen Interest from Four Groups in Developing the Project
905	Micmac Residents Battle Rezoning Proposal	Monday February 14th., 2000	A-3	-
939	Micmac Rezoning Opposed	Monday March 13th., 2000	A-5	Letter to the Editor
941	Rezoning Would Create Traffic Problems	Monday March 13th., 2000	A-5	Letter to the Editor
947	Micmac Gas Bar 'Not Appropriate for Neighborhood	Wednesday March 15th., 2000	A-6	-
1075	Apartment Complex to be Constructed Despite Opposition	Wednesday October 25th., 2000	A-3	-
	Golf Driving Range Issue			
162	Former Alderman Take Swing at Driving Range Proposal	Wednesday January 10th., 1996	A-1	-
164	Driving Range Proposal Open to Public Scrutiny	Friday January 12th., 1996	A-1	-
165	Protect Henderson Lake Park	Friday January 12th., 1996	A-4	Letter to the Editor
166	Don't Damage This Salient Amenity	Friday January 12th., 1996	A-4	Letter to the Editor
170	Driving Range Plan Going to Public Hearing	Tuesday January 16th., 1996	A-1	-
171	City to Step Up Procedure for Keeping Public Informed	Tuesday January 16th., 1996	A-1	-
173	Council Custodian of Lake	Thursday January 25th., 1996	A-5	-
174	Park Would Never Be the Same	Thursday January 25th., 1996	A-5	-
177	Give Council Clear Signal	Friday January, 26th., 1996	A-3	Letter to the Editor
178	Golf Club Readies Itself	Saturday January 27th., 1996	A-3	-
180	Henderson Park City Crown Jewel	Saturday January 27th., 1996	A-4	Letter to the Editor
182	Driving Range would be Folly	Tuesday January 30th., 1996	A-2	-
183	Golf Forum Decidly One-Sided	Thursday February 1st., 1996	A-3	(In Favor)
184	Maybe Golf Club Should Relocate	Thursday February 1st., 1996	A-3	Letter to the Editor
185	Don't Change The Experience	Thursday February 1st., 1996	A-3	Letter to the Editor
186	Driving Range Issues Incites Public	Friday February 2nd. 1996	-	(Not in Favor)
188	Golf Range Critics Have Their Say	Tuesday February 6th., 1996	A-3	(Not in Favor)
189	Boat Rental Owner Retracts Her Support	Tuesday February 6th., 1996	A-3	-
190	Driving Range Proposal Still on Council Table	Wednesday February 7th., 1996	A-3	(Not in Favor)
191	Tourist Comment on Henderson	Wednesday February 7th., 1996	A-4	Letter to the Editor (Not in Favor)
192	City, Golf Club Partnership Viewed with Suspicion	Thursday February 8th., 1996	A-5	Letter to the Editor (Not in Favor)
193	Henderson Highly Desirable	Thursday February 8th., 1996	A-5	Letter to the Editor (Not in Favor)
194	A Selection of Daring Alternatives	Friday February 9th., 1996	A-5	Letter to the Editor (Not in Favor)
195	Driving Range Decision Day Arrives	Saturday February 10th., 1996	A-1	(Description)
196	Driving Range an Atrocious Idea	Saturday February 10th., 1996	A-4	Letter to the Editor (Not in Favor)
197	No-Name Callers not Amusing	Saturday February 10th., 1996	A-4	Letter to the Editor (In Favor)
198	8-0 Vote Sinks Driving Range	Tuesday February 13th., 1996	A-1	-
	West Side Mall Issue			
215	Developer Plans Mall on West Side	Thursday April 4th., 1996	A-1	-
220	West Side Buzzing with Spirit o Competition	Saturday April 13th., 1996	A-1	Area Residents Are Ready for Development Says One Businessman
227	Council to Poll Public on Westside Mall Plans	Tuesday April 22nd., 1996	A-3	-
238	Mall Petition Appreciated	Sunday May 12th., 1996	A-4	-
244	West Highlands Hearing Monday	Friday May 24th., 1996	A-3	-
254	Will Mall Split the Westside	Tuesday June 4th., 1996	A-1	-
506	West Side Mall Construction to Herald Spring	Friday October 10th., 1997	A-1	-
576	West Side Mall Gets the Nod from City Hall	Wednesday February 25th., 1998	A-1	
	Downtown Business Association Issue			
355	Failed Petition Won't Stop Downtown LA Foes	Monday January 13th., 1997	A-1	-
356	Drive to Disband Downtown LA Will Forge Ahead, Say Business	Tuesday January 14th., 1997	A-1	-

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357	Downtown LA Tells Detractors: 'Tell Us About Your Concerns'	Wednesday January 15th., 1997	A-1	-
363	Second West Side Mall Gets City Hall's Approval	Tuesday January 28th., 1997	A-1	-
364	Downtown LA Annual Meeting Wednesday	Tuesday January 28th., 1997		-
	New City Hall			
236	City Home Starts Surge Ahead in April	Wednesday May 8th., 1996	A-1	-
387	Council Likely to Decide to Proceed with City Hall	Monday April 21st., 1997	A-1	-
388	City Hall Gets O.K.	Tuesday April 22nd., 1997	A-1	-
411	We Need a New City Hall	Saturday June 14th., 1997	A-7	-
648	The Walls Come Tumbling Down	Tuesday September 8th., 1998	A-1	About Tiring Down the Old City Hall and Construction of the New One
722	Short Changed on New City Hall	Thursday March 25th., 1999	A-8	Not in Favor
791	One More Step Toward New City Hall	Friday September 17th., 1999	A-1	-
1002	New City Hall Ready to Open Doors for Business	Friday June 16th., 2000	A-1	-
1018	New City Hall Doesn't Come Without a Price	Saturday July 1st., 2000	A-8	Letter to the Editor
1021	City Hall Nothing to Celebrate	Tuesday July 4th., 2000	-	Letter to the Editor
1033	Downtown LA Can Now Look to the Future	Friday July 21st., 2000	A-6	Editor Comment
1043	New City Hall Signals Future	Tuesday August 15th., 2000	A-8	-
1045	City Hall a Monument to Council's Civil Waste	Saturday August 19th., 2000	A-7	Letter to the Editor
1050	City Hall Grand Opening Today	Saturday August 26th., 2000	A-1	-
1051	A Hall of an Opening!	Sunday August 27th., 2000	A-1	Good Wishes Abound as New City Hall Officially Opens to the Public
1052	Kudos to Council for 'Vision and Guts' to Build New City Hall	Sunday August 27th., 2000	A-4	Letter to the Editor Not in Favor
1053	A Blessing for Your City	Sunday August 27th., 2000	A-4	Letter to the Editor in Favor
1054	I'm in love with Lethbridge	Monday August 28th., 2000	A-8	Letter to the Editor in Favor
1057	Grand Opening Unsatisfactory	Friday September 1st., 2000	A-6	Letter to the Editor About City Hall, Not in Favor
1058	A Building to Be Proud of	Friday September 1st., 2000	A-6	Letter to the Editor About City Hall, In Favor
	Hog Plant Issue			
404	Bringing Home the Bacon! Taiwanese Pork Processor Will Create 800 Jobs in the City	Thursday June 5th., 1997	A-1	-
405	Hog Plant Key to South's Farm Success	Thursday June 5th., 1997	A-1	-
406	The Asian Connection Pays Off	Thursday June 5th., 1997	A-1	-
407	Sewage a Major Issue for Plant	Thursday June 5th., 1997	A-2	-
408	Politicians Share One Thing: They Like Great Economic News	Thursday June 5th., 1997	A-2	-
410	More 'NIMBY' Comments Expected on Hog Plant	Friday June 13th., 1997	A-16	-
413	City Calls Halt to Residential Proposal	Tuesday June 17th., 1997	A-1	-
421	City Officials Hopeful Taiwanese Will Be Sold on City Potential	Tuesday July 1st., 1997	A-1	-
422	City Woes Taiwanese Investors	Friday July 4th., 1997	A-1	-
424	Hog Plant Process Jumps Through Big Hoops	Saturday July 12th., 1997	A-1	-
425	Chamber Waves Pork Plant Flag	Thursday July 17th., 1997	-	House of Stran or House of Bricks Debate Continues on Viability of Taiwanese Hog Slaughtering Operation
426	Reader Wants His Property Rezoned to Take Advantage of Hog Plant Windfall	Saturday July 19th., 1997	A-8	Letter to the Editor (Not in Favor)
427	Hog Plant on Council's Plate Next Monday	Tuesday July 22nd., 1997	A-1	-
428	Hog Plant Questions Need to Be Answered	Tuesday July 22nd., 1997	A-10	Letter to the Editor (Not in Favor)
429	Fears of Hog Plant's Smell Overblown	Wednesday July 23rd., 1997	A-12	Letter to the Editor (In Favor)
430	Hog Plant Needs a Plebiscite	Thursday July 24th., 1997	A-14	-
432	Webbed Crusader Battles 'Carpenter's Curse'	Friday July 25th., 1997	A-1	Retired Teacher Hits the Net to Protest Hog Plant Plans
433	Red Deer Embraces Hog Expansion	Saturday July 26th., 1997	A-1	(In Favor)
434	Why is Hog Plant Decision Rush to an Early Conclusion?	Saturday July 26th., 1997	A-7	-
435	Speaking of Hogs	Sunday July 27th., 1997	A-5	-
436	Hog Plant not Burning Issue in Red Deer	Monday July 28th., 1997	A-1	-
437	Alberta Pork Market Set to Boom	Monday July 28th., 1997	A-3	-
438	Fletcher's in the Line for Major Expansion	Monday July 28th., 1997	A-3	Hogs
439	Reed Deer County Laws Support Producers	Monday July 28th., 1997	A-3	-
440	Council's Pork Bellyache	Tuesday July 29th., 1997	A-1	-
442	Checking Which Way the Wind is Blowing	Tuesday July 29th., 1997	A-3	Hogs
443	You Can't Tell By the Smell in Red Deer	Tuesday July 29th., 1997	A-3	-
444	Get the Hog Plant Going	Tuesday July 29th., 1997	A-9	-

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445	A Modest Suggestion	Tuesday July 29th., 1997	A-9	-
446	Rezoning Approval Pushes Hog Plant to the Next Stage	Wednesday July 30th., 1997	A-1	-
448	Hog Plant: Keep it Public	Wednesday July 30th., 1997	A-10	Letter to the Editor (Not in Favor)
449	Please Put the New City Hall Downwind	Wednesday July 30th., 1997	A-10	Letter to the Editor (Not in Favor)
450	Approval Can't Guarantee Trouble-Free Hog Plant	Wednesday July 30th., 1997	A-10	Letter to the Editor (Not in Favor)
452	Hog Talk Must Consider Environment	Friday August 1st., 1997	A-12	-
453	Where Was Yuan Yi Livestock Presence	Friday August 1st., 1997	A-13	-
454	City Lands Wholesale Operation	Saturday August 2nd., 1997	A-1	Hogs
455	Hog Plant: Is the Best You Can Do?	Saturday August 2nd., 1997	A-10	Letter to the Editor (Not in Favor)
456	Logics, Facts and Hog Plant	Saturday August 2nd., 1997	A-10	Letter to the Editor (In Favor)
457	Bylaws Bridle Uncontrolled Hog Expansion	Tuesday August 5th., 1997	A-1	-
458	Hog Plant: A Few Additional Points	Tuesday August 5th., 1997	A-10	Letter to the Editor (Describing and Addressing Potential Risks in the Situation)
459	Three Cheers for Plant Jobs	Tuesday August 5th., 1997	A-10	Letter to the Editor (In Favor)
460	Plant Helps City Serve Region	Tuesday August 5th., 1997	A-10	Letter to the Editor (In Favor)
463	Just What Do Red People Know?	Tuesday August 12th., 1997	A-8	Letter to the Editor (Not in Favor)
464	Low Lifes? Not Around Here!	Wednesday August 13th., 1997	A-9	Letter to the Editor (In Favor)
465	Packers Too, Are Solid Citizens	Wednesday August 13th., 1997	A-9	Letter to the Editor (In Favor)
466	Meeting A Didsummer Night's Fiasco	Friday August 15th., 1997	A-12	-
467	Highway Projects Speed On	Saturday August 16th., 1997	A-1	-
468	City Trims the Bacon from Hog Profits	Saturday August 16th., 1997	A-1	-
469	City Offer Yuan Yi Deals to Build Here	Saturday August 16th., 1997	A-3	-
470	Council to Decide on Pork Plant	Monday August 25th., 1997	A-3	-
471	Hog Plant Hits Hurdle as Land Sale Stumbles	Tuesday August 26th., 1997	A-1	-
472	Hog Plant More Harm Than Good	Wednesday August 27th., 1997	A-13	Letter to the Editor (Not in Favor)
473	Hog plant Falls into a Legal Mire	Saturday August 30th., 1997	A-1	(Not in Favor)
474	City Approves Land Sale for Pork Plant	Saturday August 30th., 1997	A-3	(Favor)
475	On Extending Yuan Yi a Positive Welcome	Saturday August 30th., 1997	A-7	-
476	Dear City ... If You Want the Plant	Tuesday September 2nd., 1997	A-10	Hogs (Not in Favor)
477	Hog Plant Moves Next Phase	Wednesday September 3rd., 1997	A-1	(But There Will Be no Public Hearing)
478	Plant's Initial Will be 1,500 Hogs Daily	Wednesday September 3rd., 1997	A-1	-
479	Environmental Group Raises New Issues on Yuan Yi proposal	Thursday September 4th., 1997	A-1	-
480	Hog Plant Suit a Campaign Opener for 98	Thursday September 4th., 1997	A-1	-
481	Keep Politicians Out of Pork	Thursday September 4th., 1997	A-11	Letter to the Editor (In Favor)
482	Full Hog Plant Impact not Revealed	Thursday September 4th., 1997	A-11	Letter to the Editor (Not in Favor)
483	Study Needed Before Site Chosen	Monday September 8th., 1997	A-1	Letter to the Editor
484	Chamber Backing Hog Plant	Tuesday September 9th., 1997	A-1	Controversy May Damage Region's Long-Term Reputation
485	Yuan Yi Project Slips into the Court System	Wednesday September 10th., 1997	A-1	-
486	Fletcher's Gears Up for Growth	Wednesday September 10th., 1997	A-1	Red Deer Based Hog Plant Goes with Major Expansion
487	More Growth for South End	Thursday September 11th., 1997	A-1	Motel, Restaurants Set for Highway 4-5 Corner
488	Plant Opponents Offer no Guarantees, Either	Thursday September 11th., 1997	A-1D	Letter to the Editor (In Favor)
489	Hurray for The Hog Plant!	Thursday September 11th., 1997	A-11	Letter to the Editor (In Favor)
490	Welcome to the City	Thursday September 11th., 1997	A-11	Letter to the Editor (In Favor)
491	Congrats on Lawsuit	Thursday September 11th., 1997	A-11	Letter to the Editor (Not in Favor)
492	Pork Boom Expected to Fatten Alberta Economy	Friday September 12th., 1997	A-1	-
493	Yuan Yi Turns Sod on Plant; Lauds City as the Place to Be	Friday September 12th., 1997	A-1	Legal Action Left in Dust for the Day as Officials Cheer on Development
495	Business, Step Forward	Friday September 12th., 1997	A-9	Favor (Hogs)
497	The Perils of Sod Secrets	Saturday September 13th., 1997	A-7	Not in Favor (Hogs)
498	Negativity of 'Minority' may Sink Future Prosperity	Tuesday September 16th., 1997	A-9	Letter to the Editor (In Favor) Hogs
499	With Yuan Yi, Some Future Hope	Wednesday September 17th., 1997	A-10	Letter to the Editor (In Favor) Hogs
500	Hog Plant Supporters Have a Comrade	Tuesday September 23rd., 1997	A-10	-
502	Plenty of Reasons to Welcome Yuan Yi Here	Saturday September 27th., 1997	A-8	-
503	Hog Plant Views Can Be Aired at Forums	Tuesday September 30th., 1997	A-3	-
504	Hog Plant Will Hurt Tourism	Wednesday October 1st., 1997	A-1	Letter to the Editor
508	Citizen's Group Still Would Like an Environmental Impact Study	Thursday October 16th., 1997	A-12	Letter to the Editor (Not in Favor)
515	Petition Merely Requested a Hog Study	Wednesday October 22nd., 1997	A-10	-
516	Hog Farms the Real Mess	Wednesday October 22nd., 1997	A-10	Letter to the Editor (Hog Problems with Manure in Picture Butte)
517	Federal Aid Request May Force Hog Plant Study	Monday October 27th., 1997	-	-

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520	Next to Bat: Yuan Yi	Thursday October 30th., 1997	A-12	-
522	City Decides Treatment Plant Better Locale for Yuan Yi Tank	Tuesday November 4th., 1997	A-3	-
523	Yuan Yi Investment: Good or Bad?	Wednesday November 5th., 1997	A-1	(Not in Favor)
524	Yuan Yi 'Bad Deal' for City	Friday November 7th., 1997	A-1	(Not in Favor)
525	Greenlight for Yuan Yi	Thursday November 13th., 1997	A-1	Hog Plant May Proceed, Says Alberta Environment
526	Hog Plant Make Financial Sense	Friday November 14th., 1997	A-16	Letter to the Editor (In Favor)
527	Lets Get On with the Hog Plant	Wednesday November 19th., 1997	A-12	Letter to the Editor (In Favor)
530	Chamber Says Walk the Walk; Urges Support for Yuan Yi	Wednesday December 3rd., 1997	A-1	-
531	Environment Officials Back Hog Review	Saturday December 6th., 1997	A-1	Experts at Environment Canada
534	MPC Giving Little Room to Move on Yuan Yi	Monday December 8th., 1997	A-1	-
535	A middle Ground Must Be Found in the Growing Hog Plant Controversy	Monday December 8th., 1997	A-1	-
536	Hog Plant Foes Lose Court Bid	Tuesday December 9th., 1997	A-1	-
537	Yuan Yi Subsidy Growing	Tuesday December 9th., 1997	A-12	-
538	We're Weary of Lawsuits	Wednesday December 10th., 1997	A-8	Favor (Hogs)
539	Hog Plant Approved	Thursday December 11th., 1997	A-1	-
541	Hog Plant Debate Still Hot Topic	Friday December 12th., 1997	A-1	-
544	A Yuan Yi Christmas Present: A Welcome Wrapped in a Warning	Thursday December 18th., 1997	A-16	-
545	Divisiveness Hogged Stage	Wednesday December 24th., 1997	A-16	Letter to the Editor (In Favor)
546	The Connection Between Yuan Yi and the Indonesian Forest Fires	First Section: Tuesday December 30th., 1997 Second Section: Wednesday December 31st., 1997	A-8	-
559	Yuan Yi Plant Gets Hit by Asian Crisis	Saturday June 24th., 1998	-	(Not in Favor)
560	Yuan Yi Lawsuit Goes to Appeal	Wednesday January 28th., 1998	A-8	-
561	Yuan Yi's Time to Come Clean	Wednesday January 28th., 1998	A-3	(Not in Favor) Rumor About Quitting
563	Environmentalist Adds His Voice to Call for Hog Plant Impact Study	Thursday January 29th., 1998	-	David Suzuki Calls for an Environmental Impact Assessment
574	Yuan Yi Plant Still a Go, Mayor Says	Saturday February 14th., 1998	A-1	Hog Plant
575	Yuan Yi Holding on Despite Delays	Saturday February 14th., 1998	A-9	-
577	Was Hog Plant Pushed by Political Pressure?	Thursday February 26th., 1998	A-12	Letter to the Editor
581	City Ignores Social Aspects of Hog Plant	Wednesday March 18th., 1998	A-10	Letter to the Editor
584	Yuan Yi Yanks Hog Plant Out of the City	Saturday March 21st., 1998	A-1	-
585	Hog Plant Supporters, Critics Ponder Outcome of Process	Saturday March 21st., 1998	A-2	-
586	Chamber Press Blasts Hog Plant Opponents	Saturday March 21st., 1998	A-2	-
589	Hog Plat's 'Brass Ring' More Like a Sow's Ear	Wednesday March 25th., 1998	A-14	Letter to the Editor
588	City Council Mull Over Next Step	Tuesday March 24th., 1998	A-1	On the Heels of Yuan Yi's Pull-Out Politicians Ponder Course of Action
590	A Thousand Apologies Required	Wednesday March 25th., 1998	A-14	Letter to the Editor
591	Responsible Industry Accepts Environmental Controls	Wednesday March 25th., 1998	A-14	Letter to the Editor
592	The Majority Wanted the Plant	Wednesday March 26th., 1998	A-11	Letter to the Editor
593	Democracy Must Work for Both Sides in Debate	Wednesday March 26th., 1998	A-11	Letter to the Editor Hog Plant
594	Even Four People Have the Right to Challenge Government	Wednesday March 26th., 1998	A-11	Letter to the Editor Hog Plant
595	Hold the Punches Next Time Around	Thursday March 26th., 1998	A-11	Editor Comment
596	Learning the Lessons Offered by the Yuan Yi Experience	Friday March 27th., 1998	A-16	Letter to the Editor
597	Things Are not Always as They Seem to Be	Friday March 27th., 1998	A-16	Letter to the Editor
598	Where Does the City Go from Here? What Does a City do After it Loses a Business Investment	Saturday March 28th., 1998	A-1	-
599	Pondering the Yuan Yi Hog Debacle: It Was Simply a Problem of not Understanding the Community	Saturday March 28th., 1998	A-6	-
600	Getting the Facts of the Matter Out	Saturday March 28th., 1998	A-6	Lethbridge Major Offers a Detailed Look at the Yuan Yi Project
601	Gang of Four Must be Proud of Itself	Saturday March 28th., 1998	A-7	Letter to the Editor
605	Vendetta Seems to Be Part of Hog Opposition	Tuesday April 7th., 1998	A-8	Letter to the Editor
607	If not Yuan Yi's Plant, Why not Try Hemp-Based Industry	Wednesday April 15th., 1998	A-12	Letter to the Editor
608	Some Further Points on the Yuan Yi Plant	Wednesday April 15th., 1998	A-12	Editor Comment
609	Reader Says Plant Opponents Should Go Back to Sleep	Wednesday April 15th., 1998	A-12	Letter to the Editor
610	Why is Plant on Its Way to Edmonton	Wednesday April 15th., 1998	A-12	Letter to the Editor
611	What Would Study had Shown us?	Wednesday April 15th., 1998	A-12	Letter to the Editor
612	In the Wake of Yuan Yi, Where Are All Clean Industries?	Wednesday April 15th., 1998	A-12	Letter to the Editor
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232	Buyers Wanted: Home Sales Now	Friday May 3rd., 1996	A-1	-
587	City Considers Land Deal with Country Club	Monday March 23rd., 1998	A-1	Selling Land from Alexander Wilderness Park
622	City Real State in Boom Cycle	Thursday April 30th., 1998	-	-
723	City Home Sales Hot and Hotter	Tuesday April 6th., 1999	A-6	Editor
835	Residential Sales Lead Record Year in Real State	Saturday January 8th., 2000	B-6	City Real State Industry
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366	Bank of Montreal Cements City Ties with New State of the Art Facility	Wednesday January 29th., 1997	A-1	
367	Banking on Downtown	Wednesday January 29th., 1997	A-8	Related to the Last One
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632	Lethbridge Becoming too Expensive	Friday June 19th., 1998	A-14	Letter to the Editor
809	Dig Deeper, Lethbridge Property Taxes on Rise	Tuesday November 30th., 1999	A-1	Pay 3.82 % in Property Taxes in 2000
874	Lethbridge Still Low Tax Master	Tuesday January 25th., 2000	A-1	City Levels Among Lowest in Canada, Survey Indicates
1097	Taxes to Rise by a Few Bucks	Wednesday December 6th., 2000	A-1	-
780	Business Taking off for Integra Air	Thursday September 2nd., 1999	B-6	Based Lethbridge Airline
899	Airlines to Cut Flights from City	Friday February 11th., 2000	A-1	-
942	Westjet May Land City Route	Tuesday March 14th., 2000	A-1	Airline Puts Lethbridge on Expansion Runaway
789	Lethbridge Tourism Numbers Drop Slightly From Last Year's Tally	Tuesday September 14th., 1999	A-3	-
206	Government Takes Major Step Toward Existing Tourism Business	Saturday February 24th., 1996	A-1	-
902	City to Play Host to Tourism World	Saturday February 12th., 2000	-	Lethbridge Lands Country's Second Largest Travel and Tourism Convention
736	Howard Johnson Expanding Presence in Southern Alberta	Monday May 17th., 1999	B-5	Announcement Possible Soon on the Acquisition of Lethbridge Property
748	Renewed Bridge Town House Inn Set to Join Howard Johnson Family	Wednesday June 23rd., 1999	B-6	-
787	City Unemployment Stats Drop Yet Again	Saturday September 11th., 1999	A-3	-
1025	Local Jobless Rate Continues Below Five Percent	Saturday July 4th., 2000	B-7	Lethbridge-Medicine Hat Area Rate 4.7 %
909	37 Businesses Received City Licenses in January	Wednesday February 16th., 2000	B-6	-
965	City Licenses 37 Businesses During March	Monday April 17th., 2000	B-5	-
944	Neighbors Battle West Side Gas Bar	Tuesday March 14th., 2000	A-6	-
949	Gas Bar Goes Against Plan	Monday March 19th., 2000	A-6	-
959	Businesses Oppose Plan For Wal-Mart Expansion	Friday April 7th., 2000	A-1	Downtowneers Fear Rezoning in South Could Mean Stagnation Elsewhere
966	City Rejects Mall Scheme	Tuesday April 18th., 2000	A-1	-
969	Developer Blames Local Politics for Putting Kibosh on Mall Plan	Friday April 20th., 2000	A-1	-
970	Mall Proposal Handled Badly	Friday April 20th., 2000	A-6	-
973	Is Another Mall Really Necessary	Monday May 1st., 2000	A-8	-
975	Mall Plan Back to Council	Wednesday May 3rd., 2000	A-1	-
984	Mall Manager Speaks Out Against 'Big Box" Plan	Monday May 22nd., 2000	A-1	City Council Should Have Its Own Municipal Plan
986	Council Urged Not to Be Hasty with 'Big Box'	Wednesday May 24th., 2000	-	Homeowners Fear Vandalism, Increased Traffic
995	Big Box Rules Split Council	Tuesday May 30th., 2000	A-3	-
997	Big Box' Mall on South Side Could Cost Local Tax Payers	Friday June 2nd., 2000	A-6	-
998	Mall Idea Needs to Be Study	Friday June 2nd., 2000	A-6	-
1001	City Businessman Upset over Approval of New Mall	Tuesday June 13th., 2000	A-6	-
1004	New Mall Will Cost Tax Payers	Tuesday June 20th., 2000	A-6	-
1013	Big Box Project: Good or Bad	Wednesday June 28th., 2000	A-8	-
1020	Concerned About the 'Big Box' Mall	Monday July 3rd., 2000	-	Letter to the Editor
1036	City Off to Court Again	Wednesday July 26th., 2000	A-4	Acreage Owner Seeks to Stop Big Box Mall
1099	Wal-Mart Going Ahead with Big Box Store	Thursday December 7th., 2000	B-6	Site Work Begins on Mayor Magrath Drive Site for Summer 2001 Opening
4	Developer Discourage by Plans Cool Reception	Monday April 3rd., 1995	-	-
34	Lethbridge Regional Hospital Renovations already on the Go	Friday April 28th., 1995	-	-
48	Ottawa to Pay to Upgrade Rail Crossing	Thursday May 18th., 1995	-	-
52	Westcastle Development Left Hanging by the Province	Friday May 26th., 1995	-	-
53	Chinese Show Interest in City Diversification	Wednesday May 31st., 1995	-	-
105	Police Station Work Gets Green Light	Wednesday July 5th., 1995	A-1	-
143	Protesters Criticize Harsh Budget Cuts	Friday October 13th., 1995	A-1	To Premier Ralph Klein
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269	Galloping Growth	Saturday June 22nd., 1996	A-1	Residential, Commercial Development Spur Each Other On in City's Southside
270	City Firm Taps World Markets	Wednesday July 17th., 1996	A-1	-
272	Child's Play Proves Costly to Ice Arena	Saturday July 27th., 1996	-	-
279	Workers Surprised by Store Closures	Saturday August 10th., 1996	A-1	-
292	Triple E Enters Global Market	Thursday August 29th., 1996	A-1	Japanese Company Buys Local Mobile Home Firm
326	Jets Will Soar Says Company	Monday October 28th., 1996	A-1	-
332	City Gets New TV Station	Saturday November 2nd., 1996	A-1	-
352	Business Make Major Move in Lethbridge's Industrial Park	Wednesday January 8th., 1997	A-1	-
353	New Restaurant, Motel Forcardson	Thursday January 9th., 1997	-	-
379	Business College Students Shocked at Closure	Wednesday April 2nd., 1997	A-1	-
397	Its Official: Our City is Still Growing Strong	Tuesday May 6th., 1997	A-1	-
400	Hotel Fever Hits the City	Tuesday May 27th., 1997	A-1	-
418	Boom Town	Saturday June 21st., 1997	A-1	City's South End Will Be Site of New IGA Store
441	City Company Has Big plants for Northside Mall	Tuesday July 29th., 1997	A-1	Quality Holdings Will Build Bowling Center as Part of Deal
528	Get Out the Wallets, Folks	Tuesday November 25th., 1997	A-1	(City Taxes Will Go Up $20)
565	Mission Accomplished, Lethbridge Delegation Enthusiastic About More Trade Links with Chile	Tuesday February 3rd., 1998	B-5	-
635	Business Optimistic About Local Economy	Wednesday June 24th., 1998	B-6	-
676	Yoplait Manufacturer Eyes Lethbridge Plant	Tuesday November 24th., 1998	-	-
682	Strong Sales Fuel Expansion of City's Retail Sector	Thursday December 31st., 1998	-	-
743	Dollar Store to Open in West Lethbridge	Saturday June 12th., 1999	A-7	-
746	JCR Boss Dismisses Rumors of Sale	Friday June 18th., 1999	B-7	-
747	City-Based Consulting Firm Acquired by U.S. Company	Wednesday June 23rd., 1999	B-5	Farm Consulting Company, Commodities Specialist Firm
750	Hotel Boom Fuels Braman Growth	Friday June 25th., 1999	B-6	Furniture Manufacturer Adding Staff to Keep Up with Demand
754	Council To consider North side Growth	Monday June 28th., 1999	A-3	Urban Designer Proposing Plan for Task Force Focused on City's North End
757	Local Businesses High on Lethbridge Economy	Wednesday June 30th., 1999	-	-
758	City Site Expanded Youth Job Plan	Thursday July 1st. 1999	A-3	-
765	Research Focus for Chinese Visit	Thursday July 15th., 1999	B-6	-
779	Thanks, John, for efforts to Revitalize the Downtown	Wednesday September 1st., 1999	A-6	-
1003	Hunday Adds Trademark to Lethbridge Autoline up	Tuesday June 20th., 2000	A-1	-
1094	Residents Can Expect Tax Hike	Tuesday December 5th., 2000	A-1	City Council as Finance Committee Looking at Increase of 4.7 Percent for Next Year
1101	City Could lose Industry, Businesses May Pull Up Stakes in Search of lower Power Rates	Saturday December 9th., 2000	A-1	-
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7	Layoff a Shock to JRC Workers	Thursday April 6th., 1995	-	-
79	JRC Layoffs Become Permanent	Tuesday June 13th., 1995	A-1	-
43	Award Winning Nurse Among Layoff Casualties	Monday May 8th., 1995	-	-
45	Protests Target Health Care Cuts	Tuesday May 9th., 1995	-	-
54	Farmers Urged to Fight to Save AG Job Services	Tuesday June 6th., 1995	-	-
106	Layoffs Hit St. Mike's as Cutbacks Continue	Saturday July 8th., 1995	A-1	-
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108	Health Care Workers Changing Careers	Tuesday July 11th., 1995	A-2	-
111	Nurse's Union Files Complaint Against St. Michael's Officials	Tuesday July 18., 1995	-	-
114	Health Unions Air Displeasure Over Severance	Friday July 28th., 1995	A-1	-
125	City Could Be in Line for 75 Laundry Jobs	Tuesday September 5th., 1995	A-1	-
139	Jobs on line in Home-Care Shuffle	Tuesday October 3rd., 1995	A-1	-
156	Stop the Cuts	Wednesday December 13th., 1995	A-3	Health Care Cuts
207	Workers Sick and Tired of Job Conditions	Saturday February 24th., 1996	A-3	(Not in Favor)
218	Cash Infusion Will Mean More Jobs for Home and Acute Care	Friday April 12th., 1996	A-3	(Positive)
343	St. Mike's Lays Off 11 Nurses	Friday November 29th., 1996	A-1	-
344	Uncertainty Takes Stress Toll at St. Michael's	Saturday November 30th., 1996	A-1	-
347	St. Mike's Sees More Job Cuts	Saturday December 7th., 1996	A-1	-

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376	Safeway Faces Walkout	Wednesday March 19th., 1997	A-11	Lethbridge Workers May Be Off the Job Next Week
377	Safeway Workers to Strike	Thursday March 20th., 1997	A-1	-
381	No Quick End to Safeway to Safeway Dispute	Friday April 4th., 1997	A-1	-
383	Back at Job	Saturday April 5th., 1997	A-1	One Third of Safeway's City Staff Back at Work
532	Lethbridge Hits Jobless Low	Saturday December 6th., 1997	A-1	-
794	Local Business Community Welcomes 35 New Additions	Thursday October 7th., 1999	B-5	
1092	City Could Snag 300 New Jobs	Saturday December 2nd., 2000	A-1	A Boston Technology Information Company
1100	Jobs Bypass Lethbridge	Friday December 8th., 2000	A-1	Massachusetts Firm Says Its no Longer Considering City for Service Centre
1106	Stream May Still Choose Lethbridge	Wednesday December 13th., 2000	A-1	Official Says Other Firms Also Have Eyes on City
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104	Incineration Issues Inflames Landfill Debate	Thursday June 29th., 1995	A-5	-
119	Trash Site Picked for Region	Friday August 18th., 1995	A-1	-
121	The Hard Part's Over Lethbridge Motel	Tuesday August 22nd., 1995	A-3	-
131	City Unveils Landfill Site	Thursday September 21st., 1995	A-1	-
132	Stakeholders Supports Proposed Regional Landfill Site	Thursday September 21st., 1995	A-3	-
142	No Transfer Station, No Landfill,' City Told	Thursday October 5th., 1995	A-3	-
147	Landfill Battle Goes Public	Sunday October 15th., 1995	A-5	-
187	Council Considers Landfill Changes	Saturday February 3rd., 1996	A-3	-
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567	Garbage Business Picked Up	Friday February 6th., 1998	-	New Kid on the Waste Disposal Block Has Big Plans
781	City May Buy Landfill	Saturday September 4th., 1999	A-1	Mayor Says Deal Will Cost $12.2 Million; Council to Decide Tuesday
783	Don't Gamble on Landfill Deal	Saturday September 4th., 1999	A-7	Letter to the Editor
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788	Is Anyone Concerned About $12-million Cost of Dump?	Monday September 13th., 1999	A-8	-
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163	Officials Defend Delaying Spill News	Thursday January 11th., 1996	A-1	-
167	Diesel Spill Could Bring Charges	Thursday January 13th., 1996	A-1	Diesel Spill Continuation
168	City Reacts Quickly to 'minute' Oil Spill	Thursday January 13th., 1996	A-1	-
226	Diesel Spill Source Unknown	Saturday April 20th., 1996	A-1	-
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298	Fuel Spill Catastrophe Averted by Quick Action	Sunday September 1st., 1996	A-1	-
402	Iodine Spill Stings City Neighbors	Thursday May 29th., 1997	A-1	-
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18	Sanitary Sewer Study Targeted for City's Southeast	Tuesday April 11th., 1995	-	-
33	Sludge Disposal a Winner	Thursday April 27th., 1995	-	-
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382	City Sewage Release Exceeds Levels	Friday April 4th., 1997	A-3	-

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731	City to Look at Generation Electricity at Sewage Plant	Monday May 3rd., 1999	A-1	
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756	It's the City, not Feedlots that Gumming the River	Tuesday June 29th., 1999	A-6	Letter to the Editor
985	Sewer Water Infrastructure Costs Put Halt on Southeast Development	Monday May 22nd., 2000	A-4	
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202	City Water Supply Back to Normal	Friday February 16th., 1996	A-1	-
203	City Official Hopes to Worry-Free Water Weekend	Saturday February 17th., 1996	A-1	-
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368	Get Use to Taste of Chlorine	Friday January 31st., 1997	A-1	-
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707	City Takes Next Step to Water Plant Upgrade	Wednesday February 24th., 1999	A-3	-
745	Water Committee Has Formal Link with City Council	Thursday June 17th., 1999	B-6	-
751	No Human Side Yet to River Study	Saturday June 26th., 1999	B-5	Oldman River
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580	City Lacks Vision, Direction in its Waste Recycling Program	Thursday March 12th., 1998	A-12	Letter to the Editor
1114	Make Recycling Holiday Tradition	Thursday December 28th., 2000	A-8	-
603	Blue Box Plan to Be Curved, but Pallets Are the Next Wave	Wednesday April 1st., 1998	A-1	-
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716	Herbicide Levels Should Shake Us Up	Friday March 12th., 1999	A-6	Letter to the Editor
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767	Pesticides Part of Obsession to Have Perfect Lawns, Parks	Sunday July 25th., 1999	A-4	-
768	Group to Grill Council Over Pesticide Use	Monday July 26th., 1999	A-1	-
769	Chemist Concern Over Possible Effects of Pesticide Use	Monday July 26th., 1999	A-3	-
774	Let's Give Non-Poisonous Weed Program a Chance	Monday August 9th., 1999	A-6	-
775	Weed Experts Gather in City to Discuss Control Measures	Tuesday August 10th., 1999	-	-
776	Public Input Necessary in Weed Control Standards	Friday August 13th., 1999	B-6	-
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827	Council Showing Lack of Vision	Wednesday January 5th., 2000	A-6	City Council Decision to Cancel the Urban Environmental Program and the Position of Natural Resources. Letter to the Editor
834	City Needs Resource Manager, Says Helen Schuler Committee	Saturday January 8th., 2000	A-7	-
837	The City Need Uz. Something Fishy About Council's Decision to Cut Position of Natural Resources Manager	Monday January 10th., 2000	A-6	-
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717	Depots Needed in All Directions	Saturday March 13th., 1999	-	Letter to the Editor
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737	Regulation of Bottledepots Just Don't Make any Sense	Thursday May 20th., 1999	A-8	-
810	City to See Two More Bottle Depots	Wednesday December 1st., 1999	A-1	-
825	Westside, Downtown Get Bottle Depots	Tuesday January 4th., 2000	A-1	-
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259	Housing Slump: Fill May Save Some Threatened Northside Homes. For Others, There is a Little Hope	Friday June 7th., 1996	A-1	-
261	City Homeowner Fears House Value Sliding into Coulee	Monday June 10th., 1996	A-1	-
266	Home Owners Still Await Slumping Coulee Answers	Tuesday June 18th., 1996	-	-
325	City Told: Don't Buy Stafford Houses	Monday October 21st., 1996	A-1	-
451	This Coulee Still Bedevils Council	Thursday July 31st., 1997	A-1	-
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725	Supermoms to the Rescue	Wednesday April 14th., 1999	A-1	Crusaders Save Barons School for at Least a Year
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901	Parents Hope to Save Off Barons School Closure	Friday February 11th., 2000	-	-
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281	A Tough Answer for Coaldale	Thursday August 15th., 1996	A-1	-
287	Okotoks Mayor Doesn't Share Incinerator Fears	Monday August 19th., 1996	A-1	-
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896	Coaldale Needs Emergency Department	Monday February 7th., 2000	A-5	Letter to the Editor
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360	Nobleford-Area Residents Concerned About Health Impact of Gas Plant	Sunday January 19th., 1997	A-1	-
361	Rush Is on to Oppose Sour Gas Plant	Wednesday January 22nd., 1997	-	-
401	Nobleford Set to Growth	Wednesday May 28th., 1997	A-6	-
511	Classes Available at Nobleford	Friday October 17th., 1997	A-4	-
	TOWN OF PICTURE BUTTE			
101	City Studies Supplying Water	Friday June 23 rd., 1995	A-3	Picture Butte Asks for Help
264	Blaze Shuts Down Hotel	Sunday June 16th., 1996	A-1	Picture Butte
335	Locals Give Thumbs -Up to Picture Butte	Thursday November 14th., 1996	A-4	-
349	No Tax Hike for Picture Butte Residents	Thursday December 12th., 1996	A-4	-
494	Butte Council Turns Down Feedlot	Friday September 12th., 1997	A-4	-
496	Petition Pushes for New Control	Saturday September 13th., 1997	A-1	Picture Butte
514	Butte Farmer Ordered to Cease Illegal Hog Barn Operation	Tuesday October 21st., 1997	A-2	-
529	Boiling in Butte: Town Bit By Bug	Wednesday December 3rd., 1997	A-1	Boil Water Hits Another Community
533	Butte Folks Hope to Toast Holidays with a Glass of Good Tap Water	Monday December 8th., 1997	A-1	-
542	Butte Back to Using Taps	Saturday December 13th., 1997	A-1	-
683	Study Takes Another Look at Picture Butte Pipeline	Monday January 4th., 1999	A-1	About Getting Water from the City of Lethbridge
1074	Picture Butte Water Upgrade Under Scrutiny from Residents	Thursday October 19th., 2000	A-3	-
953	LNID Rate Payers Favor Picture Butte Office	Monday March 27th., 2000	B-5	Lethbridge Northern Irrigation District
671	Maple Leaf Hog Plant Operational	Thursday October 22nd., 1998	B-5	Picture Butte
721	Maple Leaf Potatoes Expanding Plant, Production, Jobs	Wednesday March 24th., 1999	B-5	-
771	Live Stock Odour Impact Target in Picture Butte, Brooks Study	Tuesday August 3rd., 1999	B-5	-
801	Cattle Feeders Seek Funds to Aid Research Programs	Saturday November 6th., 1999	B-5	Picture Butte
915	Picture Butte Calls for Emergency Measures	Tuesday February 22nd., 2000	-	About ER
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118	Pincher Creek Still Battling June Flood	Saturday July 29th., 1995	A-1	-

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309	Wind Equals Jobs for Pincher Creek Area	Thursday September 19th., 1996	-	-
346	Pincher's Fingers Crossed for Mega Wind Project	Thursday December 5th., 1996	A-5	-
362	Pincher Creek Group Vows Wind Project to be Election Issue	Monday January 27th., 1997	A-3	-
372	Environment Would Beneficiate from Wind Power Development	Monday February 10th., 1997	A-8	-
403	Wind Project Blown Away	Wednesday June 4th., 1997	A-1	-
552	Pincher Betting on the Wind	Friday January 16th., 1998	A-4	-
543	Pincher Creek Still Reels After Double Murder	Thursday December 18th., 1997	A-1	-
31	Town Considers Establishing Casino	Thursday April 27th., 1995	-	Town of Pincher Creek
369	Seniors Accommodation Focus of Pincher Creek Meeting	Friday February 7th., 1997	A-4	-
393	Pincher Residents Escape Tax Hike	Friday May 2nd., 1997	A-4	-
134	Pincher MD. Axes Logging Rules	Friday September 27th., 1995	A-1	-
250	Pincher Creek Hospital Needs Beds	Saturday June 1st., 1996	A-3	-
127	Rural Nurses Fear Unsafe Conditions	Friday September 8th., 1995	A-3	Pincher Creek RN's Hope to Crank Up Political Heat on Staffing Situation
290	Wildfire Scorches Prairie Grassland	Sunday August 25th., 1996	A-4	Pincher Creek
564	Pincher Creek School May Be Facing Closure	Friday January 30th., 1998	A-3	-
566	Pincher Creek with Effort May Get New Breath of Life	Wednesday February 4th., 1998	-	-
572	Pincher Residents Won't Pay Increased Taxes	Friday February 13th., 1998	A-4	-
583	Plans for new Complex Taking Shape in Pincher	Thursday March 19th., 1998	A-4	About Indoor Swimming Pool
606	Landfill Deal Involves Partnership	Wednesday April 15th., 1998	A-4	Pincher Creek
621	Livingstone to Close Pincher Creek School	Thursday April 30th., 1998	-	-
677	Pincher Creek Won't Put Lid on Kid's Street Time	Wednesday November 25th., 1998	-	-
696	Pincher Creek Group Looking to Cut Cigarette Sales to Minors	Monday February 8th., 1999	A-4	-
759	Tiger Brand Shreds Pincher Creek Jobs	Friday July 2nd., 1999	-	-
770	New Pincher Creek Pool a Hit, but Pool's Fate Undecided	Tuesday July 29th., 1999	A-3	-
772	Pincher's New Curfew Send Kids in by 11	Friday August 6th., 1999	A-3	-
782	Pincher Creek Debates Winter Closure of its Pool	Saturday September 4th., 1999	A-3	-
790	Pincher Creek to Remain Open for the Next 13 Months	Wednesday September 15th., 1999	A-4	-
811	Pincher Creek Facility Loses Water Science Centre	Wednesday December 1st., 1999	A-4	-

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2	Raymond Council Defends Contract	Sunday April 2nd., 1995	-	About Garbage Contract Given to Another Contractor
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507	To Boil…or Not to Boil…	Thursday October 16th., 1997	A-1	Shaughnessy (Boil Water)
509	Shaughnessy Still Stuck with Water Contamination	Friday October 17th., 1997	A-1	-
519	Clean Water Flows Again in Shaughnessy	Thursday October 30th., 1997	A-1	-
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961	Vulcan Parents Set Poor Example for Their Children	Wednesday April 12th., 2000	A-6	-
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625	County of Lethbridge Goes Back to Livestock Tax Well Idea	Tuesday June 9th., 1998	A-1	Get Taxes form Livestock Operations
629	County Council's Tax Efforts Based on Fairness, Equity	Saturday June 13th., 1998	A-7	Editor Note
664	County Forges Ahead with New Business Tax	Tuesday October 6th., 1998	A-1	-
668	Tax Debate Swirls on in County	Friday October 9th., 1998	A-1	-
799	County of Lethbridge Again Backtracks on feedlot Tax	Friday November 5th., 1999	A-4	-
800	Residents Upset over Lack of Feedlot Tax	Saturday November 6th., 1999	A-3	County's Decision Points to Systematic Discrimination Says Acreage Owner
1027	Group May Take Legal Action Against County	Friday July 14th., 2000	A-1	SAEG Considers Going to Court Over Feedlot Permits
1030	Feedlot Farmer Duel Over Plans	Tuesday July 18th., 2000	A-3	Appeal Board Hears Arguments on Van Raay Expansion
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1061	Proposed Hog Farm Gets Thumbs Down	Thursday September 7th., 2000	A-1	County of Lethbridge, Near Turin
1064	Board Was Right to Reject Hog Farm	Monday September 11th., 2000	A-8	Letter to the Editor
631	Board Gives Green Light to Feedlot	Friday June 19th., 1998	A-14	County Rejects Neighbors' Appeal of New Project
1034	County is Dragging Its Feet on Feedlot Alley Issues	Sunday July 23rd., 2000	-	
684	McCain Chooses County. Potato Processor Snubs MD of Taber, Will locate Outside Chin	Friday January 8th., 1999	A-1	County of Lethbridge
686	Cheers All Around for McCain. Spud Plant Will Fuel Economy in the County and Elsewhere	Saturday January 9th., 1999	A-1	-
688	McCain Plant Could Become Largest Chip on the Block	Thursday January 14th., 1999	A-1	-
692	City Council Will Ponder Water Pipeline Deal	Saturday January 23rd., 1999	-	Coaldale Fry Plant Would Enjoy Steady Supply of Lethbridge Water
697	City May Let Water Flow East for Cash	Tuesday February 9th., 1999	-	To the Town of Coaldale to the McCain Plant
796	Local Firm Win Contract to Build McCain Complex	Thursday October 14th., 1999	B-5	-
703	Potato Facts Highlight Open House on McCain's New Potato Plant	Saturday February 13th., 1999	-	-
704	New Housing Project Designed with McCain Workers in Mind	Wednesday February 17th., 1999	-	-
705	Potato plant Resurrects Water Pipeline Plan	Saturday February 20th., 1999	B-4	-
720	Stop the Rumor! McCain Still Coming	Friday March 19th., 1999	A-1	-
728	McCain Clears Another Hurdle	Friday April 16th., 1999	A-1	-
729	Quality Control A key Part of French Fry Part	Monday April 19th., 1999	A-1	-
742	McCain Plant Gets the Green Light	Friday June 11th., 1999	B-6	From Alberta Environment
760	McCain Plant Speeding Along on Schedule	Saturday July 3rd., 1999	B-4	-
792	McCain Potato Plant on Schedule	Wednesday September 22nd., 1999	B-5	-
797	Dec. 31 Completion Set for Water Link	Thursday October 28th., 1999	-	Coaldale, McCain's Plant to Get City Water in New Millennium
812	McCain Job Fair Goes December 10,11	Friday December 3rd., 1999	B-6	For People to Be hired in Southern Alberta

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928	McCain Begins Hiring for New Plant at Chin	Thursday March 2nd., 2000	-	-
958	McCain Complete Hiring of 100 for First Shift Work	Thursday April 6th., 2000	A-3	-
974	McCain Gives $ 86,000 to Coaldale Library	Wednesday May 3rd., 2000	A-1	-
1039	Water Pipeline the Best Solution	Saturday August 5th., 2000	A-7	Editor Comment
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1068	McCain's officially Opens	Friday September 22nd., 2000	A-1	-
1069	New McCain Plant Good News for Growers	Friday September 22nd., 2000	B-8	-
1070	Potato Processing Operations Boost Area's Economic Activity	Saturday September 23rd., 2000	B-8	-
1086	McCain's Slow Payment Has Firms Boiling	Tuesday November 14th., 2000	A-1	-
1087	McCain Detractors in Minority	Sunday November 19th., 2000	A-4	Letter to the Editor
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798	County Residents Face Higher Fees for Water Supply	Wednesday November 3rd., 1999	A-1	-
1031	County Seeks Input on Plan to Pipe Water from Lethbridge	Wednesday July 19th., 2000	A-1	Plan More Cost Efficient than Upgrading Treatment Plants
1038	County Opts for City Water	Friday August 4th., 2000	A-1	Shaughnessy, Diamond, Turin, Iron Springs
1072	Liquid Hog Manure Raises Health Fears	Wednesday October 18th., 2000	-	in MD
1076	MD Board Overturns Liquids Manure Decision	Wednesday October 25th., 2000	A-4	-
802	County of Lethbridge Looking for Long Term Airport Plan	Sunday November 14th., 1999	A-1	-
872	County May Charge Fee to Fund Airport Upgrades	Sunday January 23rd., 2000	A-1	-
741	Lethbridge Boasts Province's Lowest Unemployment Rate	Saturday June 5th., 1999	B-6	-
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	Economic Development Articles			
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36	Cattle Producer Don't Mourn Crow's Demise	Tuesday May 2nd., 1995	-	-
37	How Will Cutting Crow Rate Impact Rural Areas	Wednesday May 3rd., 1995	-	-
39	Coming End of Crow Benefit Hasn't Changed Crop Plans	Thursday May 4th., 1995	-	-
40	Passing the Crow Leaves Unresolved Problems	Sunday May 7th., 1995	-	-
122	Passing of the Crow Deserves a Backward Glance	Wednesday August 23rd., 1995	A-4	-
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175	County Hopes Airport Takeover Will Fly	Friday January, 26th., 1996	A-1	-
178	Airport Vital Link to Economic Development	Friday January, 26th., 1996	A-3	-
219	Taking Flight	Saturday April 13th., 1996	A-1	County of Lethbridge Making Headway in Talks to Take Over Lethbridge Airport
297	Airport Takeover a Signature Away	Saturday August 31st., 1996	A-1	-
462	County Wings it on Airport Plant	Monday August 11th., 1997	A-1	No Decision Yet on Who Pulls the String
694	Lethbridge Airport Business Ready to Take Off this Year	Saturday January 30th., 1999	A-1	
929	Take Offs, Landing on Rise in Lethbridge	Tuesday March 7th., 2000	A-1	But Number of Passengers Continues to Decline from Record Mark of a Decade Ago
943	Southern Alberta Air Service May Take Flight Again	Tuesday March 14th., 2000	A-6	-
972	Integra Air Launching New Flights from Lethbridge	Friday April 28th., 2000	B-6	-
1047	New Airline Eyes Lethbridge	Tuesday August 22nd., 2000	B-6	Capital City Plans to Hat, Calgary Starting in Falling
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304	Shippers Seek Alternatives for Rail Service	Friday September 13th., 1996	A-1	-
300	City Council Will Ask Railway Why it Plans to Shut Down City Facility	Tuesday September 10th., 1996	A-1	-
327	City Firms May Look to Co-op	Tuesday October 29th., 1996	A-1	-
329	City Has Role in New Co-op	Tuesday October 29th., 1996	A-1	-
385	End of the Line	Tuesday April 8th., 1997	A-1	Rail Closures Threaten Prairie Grain Sentinels
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27	Business Booming at the Border	Monday April 24th., 1995	-	-
38	Diversification Causes Headache for County	Thursday May 4th., 1995	-	-
234	Good News: Home Taxes Will Drop	Tuesday May 7th., 1996	A-1	-
278	Lethbridge's Poverty is Real	Thursday August 1st., 1996	A-1	-

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417	Region's Livestock the Focus of Emerging Dialogue, Debate	Saturday June 21st., 1997	A-1	-
1091	Enchant Area Farmer to Put Composting Though Field Trials	Saturday December 1st., 2000	A-5	-
1109	CHR Officials Issue Boil-Water Order for Taber	Thursday December 21st., 2000	A-1	-
1110	Taber Boil-Water Order Lifted Just in Time for Holidays	Saturday December 23rd., 2000	A-1	-
1111	Officials Deserve Applause for Quick Boil Water Order	Saturday December 23rd., 2000	A-6	Letter to the Editor
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882	Rural ER's May Close, MLA Says	Monday January 31st., 2000	A-1	
883	Closing ER's Not a Solution	Monday January 31st., 2000	A-6	Editor Comment
903	Save Our ER Forums Still On	Sunday February 13th., 2000	A-1	-
904	CHR Plan on Hold for Now	Saturday February 12th., 2000	A-1	Minister Ask Officials to Postpone Any Rural Changes
906	Doctor's Claim CHR Betrayal	Tuesday February 15th., 2000	A-1	Physicians Say Emergency Cutbacks Are Threatening People's Health
916	CHR in Wrong Direction	Thursday February 24th., 2000	A-6	Long Term Health Care for Seniors
918	Rural Closures Will Be Felt in Lethbridge Too	Saturday February 26th., 2000	A-6	Letter to the Editor
924	ER Closures Would Put Lives at Risk	Wednesday March 1st., 2000	A-6	Rural Residents Riled
925	Needs of Rural Residents Being Ignored	Wednesday March 1st., 2000	A-6	Rural Residents Riled
926	Drs. Target the Wrong Group	Wednesday March 1st., 2000	A-6	Rural Residents Riled
932	Public Has Right to Know What CHR is Doing	Thursday March 9th., 2000	A-6	-
933	Rural ER's Are Safe: CHR	Saturday March 11th., 2000	A-1	-
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644	Region Recovering from Severe Case of Doctor Shortage	Thursday August 27th., 1998	A-1	CHR Announces Recruits Coming for Several Vital Medical Positions
689	Area Hospitals Coping with Bed Shortage	Thursday January 21st., 1999	A-3	-
877	Bed Shortage a Crisis	Wednesday January 26th., 2000	A-1	LRH in Dire Need of Places to Put Patients, Say Officials
912	Coalition to Study Child Poverty in CHR	Friday February 18th., 2000	A-3	-
948	CHR Looks at New Plan	Saturday March 18th., 2000	A-1	Chronic Shortage of Beds Still Region's Top Priority
983	CHR Gets $ 1 Million Booster	Friday May 19th., 2000	A-1	-
987	CHR Grids to a Halt	Thursday May 25th., 2000	A-1	Strike Leaves Hospital Under Staffed
988	Strikers Ready for 'Long Haul'	Thursday May 25th., 2000	A-1	-
989	ER Shows a Little Effect from Strike	Thursday May 25th., 2000	A-1	-
990	Who's on Strike, Who's not	Thursday May 25th., 2000	A-1	-
991	Strikers Vote on Deal	Friday May 26th., 2000	A-1	-
992	CHR Signs 'Good News' 2000 Budget	Friday May 26th., 2000	-	-
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1103	Cold Snap Keeps Down Visits to ER's	Sunday December 10th., 2000	A-1	-
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8	Rural Hospital Chiefs Victims of Latest Cuts	Friday April 7th., 1995	-	-
19	Regional Hospital Nurses Face Layoffs	Wednesday April 12th., 1995	-	-
29	Layoff Taking Effect on Four Rural Hospitals	Wednesday April 26th., 1995	-	-
135	More Doctors Jumping Ship	Monday October 2nd., 1995	A-1	-
136	Doctor Flees for Tennessee	Monday October 2nd., 1995	A-3	-
137	Province Intends to Cap Fee-for-Services	Monday October 2nd., 1995	A-3	-
144	U.S. Recruiters Wooing Southern Alberta Doctors	Friday October 13th., 1995	A-1	-
146	Doctors Made More Last Year	Friday October 13th., 1995	-	Letter to the Editor
233	Doctor Shortage Plagues the South	Friday May 3rd., 1996	A-3	-
550	Southern Alberta's Jobless Rate Hits New Low	Saturday January 10th., 1998	A-1	-
570	South Jobless Rate Plummets to Six -Year Low	Saturday February 7th., 1998	-	-
646	Jobless Rate Hits Eight-Year Low in Region	Saturday September 5th., 1998	-	-
674	Area's Jobless Rate Best in Province	Saturday November 7th., 1998	B-7	-
763	Jobless Rate Takes a Dive	Saturday July 10th., 1999	A-1	Area Unemployment at 3.7 Percent
813	Jobless Rate Down Yet Again	Saturday December 4th., 1999	A-1	Unemployment in City at 4.2%, Lethbridge-Medicine Hat Region 5.2 %

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977	Jobless Rate Rises Slightly in Alberta	Saturday May 6th., 2000	A-1	Lethbridge-Medicine Hat Area Rate 5.2 %
999	Jobs, Unemployment Both Climb in May	Saturday June 10th., 2000	A-3	Lethbridge-Medicine Hat Rate 5.4 %
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416	Livestock, Water Prove a Though Mix	Friday June 20th., 1997	A-1	-
512	Mayors to Clean Up South's Water	Monday October 20th.,1997	A-12	-
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672	Sewage Irrigation Wining Converts from all Sides	Thursday November 5th., 1998	A-1	
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415	Water is Brown as Chocolate	Thursday June 19th., 1997	A-1	-
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968	LNID Looks to Maintain Efficient Use of Its Water	Wednesday April 19th., 2000	B-5	-
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613	Feedlot Alley not on List	Thursday April 16th., 1998	A-1	Live stock Meetings Dates Don't Include Locations in Picture Butte-Monarch Area
630	Feedlots: Enough Is Enough	Thursday June 18th., 1998	A-8	-
638	Feedlot Approval a Triumph for Short-Sighted Economies	Saturday July 4th., 1998	A-6	-
639	Another Family Appeals for Stop to Feedlot Plan	Thursday August 6th., 1998	A-1	-
640	Time for Feedlots to Pay the Piper	Tuesday August 11th., 1998	A-6	-
642	Appeal to Stop Feedlot Expansion Fails	Saturday August 22nd., 1998	A-1	-
643	Feedlot Industry's Black Eye not Deserved, Says Minister	Saturday August 22nd., 1998	B-6	-
654	Rick Wants to Wear a White Hat, but Feedlots Have Long Way to Go	Tuesday September 15th.,1998	A-8	-
655	Controls Needed Now on Feedlot Operations	Wednesday September 16th., 1998	-	Letter to the Editor
666	Feedlot Operator Takes Aim at New Tax	Wednesday October 7th., 1998	A-1	Turin Feeders Boss Says Industry Has Been Unfairly Targeted by County
681	Livestock Operators Join Forces to Challenge New Business Tax	Wednesday December 16th., 1998	A-1	-
730	Residents Applying to Fight Feedlot-tax Court Challenge	Thursday April 22nd., 1999	A-1	-
735	Dairy Farmer Sees Manure as Resource, not Nuisance	Monday May 17th., 1999	B-4	-
773	Feedlots Feeding Local Economy, Cattle Industry Generating 1740 Jobs, $ 216 Million Spin Off a Year for the City and Area	Saturday August 7th., 1999	B-5	-
803	Feedlots Big Boost to Local Economy	Tuesday November 16th., 1999	A-8	Letter to the Editor
880	Protecting Water Quality, Quantity in Best Interest of Cattle Feedlot Operators	Thursday January 27th., 2000	B-5	-
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1028	Neighbors Protest 'Feed King's' Proposed New Site	Friday July 14th., 2000	A-3	-
1035	Feedlot Alley Reputation is an Embarrassment	Tuesday July 25th., 2000	A-6	Letter to the Editor
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1055	There's Something Smelly in the Feedlot Alley	Tuesday August 29th., 200	A-9	-
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1060	Something Smelly in Her Column	Wednesday September 6th., 2000	A-8	Letter to the Editor (Defending Feedlot Alley)
1063	Stories in Feedlot Alley Misleading	Friday September 8th., 2000	A-6	Letter to the Editor (In Favor) About County
1065	New Rules Necessary for Feedlots	Tuesday September 19th., 2000	A-8	Letter to the Editor
1067	Rural Life is a Good one, Feedlots, Livestock and All	Wednesday September 20th., 2000	A-7	Letter to the Editor in Favor
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752	More Agricore Elevators to Close	Saturday June 26th., 1999	B-5	-
852	Local Investment Paying Off in Jobs	Friday January 14th., 2000	B-6	Community Futures Faith in Elite Technical to Triple Employment by March
919	Budget Means Business	Tuesday February 29th., 2000	A-1	Martin's Magic May Attract New Firms to Lethbridge
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57	Towns Awashed After Heavy Rains	Wednesday June 7th., 1995	-	-
58	A River Roars Through It	Wednesday June 7th., 1995	-	-
59	The Dam Was Opened and the Race Was On	Thursday June 8th., 1995	A-1, A-2, A-3	-
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63	Fort McLeod Homeowners Forced to Evacuate	Thursday June 8th., 1995	A-1, A-2, A-3	-
64	Heroes Emerge Out of Nowhere	Thursday June 8th., 1995	A-1, A-2, A-3	-
65	Rivers of Misfortune	Thursday June 8th., 1995	A-1, A-2, A-3	-
66	Pincher's Damage Could Run into the Millions of Dollars	Thursday June 8th., 1995	A-6	-
67	Regions Rain Case of Right Conditions, Wrong Place	Thursday June 8th., 1995	A-7	-
68	River's Rage Subsides	Friday June 9th., 1995	A-1	"City Pinches Itself After a Night and Day of Battling the Oldman to a Draw"
69	Torrent Sweeps Waters Clean of City Sewage Carcasses	Friday June 9th., 1995	A-1	-
70	Nature's Felt Almost Everywhere Across the South	Friday June 9th., 1995	A-2	"Few Communities Were Left Untouched by Flood"
71	A Quick Tour of the Beleaguered Areas	Friday June 9th., 1995	A-2	-
72	Oldman Breaks-out	Friday June 9th., 1995	A-4	-
73	Heavy Rains, Flooding Bad News for Farmers	Friday June 9th., 1995	A-5	-
74	Raging Floodwaters Claim Area Livestock	Friday June 9th., 1995	A-5	-
75	Retreating River Leaves Reminder of Nature's Fury	Saturday June 10th., 1995	A-1	-
76	Heavy Rains Could Cause Setback	Saturday June 10th., 1995	A-2	-
77	A First Look at the Aftermath	Saturday June 10th., 1995	A-2	-
78	Massive Repair Effort Begins in Waterton Park	Saturday June 10th., 1995	A-2	-
80	City's River Valley Parks Show Severe Flood Damage	Tuesday June 13th., 1995	A-1	-
81	Province Unveils Plan for Disaster Assistance	Tuesday June 13th., 1995	A-1	-
82	Flood Victims Forced Back to Square One	Tuesday June 13th., 1995	A-1	-
83	Upside to Flood Devastation	Tuesday June 13th., 1995	A-2	-
84	Volunteers Rush to Aid in Clean-up Effort	Tuesday June 13th., 1995	A-2	-
85	Dam Spokesman Defends Flood's Water Management	Tuesday June 13th., 1995	A-2	-
86	Lethbridge River Valley Still in Rough Shape	Wednesday June 14th., 1995	A-2	-

Number	Name of Article	Date of Publication	Page	Description
87	Clean Up Under Way in City's River Bottom	Wednesday June 14th., 1995	A-2	-
88	Minister Defends Flood Response	Friday June 16th., 1995	A-1	-
89	Flood Damage Shock Senator	Saturday June 17th., 1995	A-1	-
90	Flood as Watchable History	Saturday June 17th., 1995	C-2	-
91	Counting the Hours	Saturday June 17th., 1995	C-2	-
92	Receding Waters Reveal Sorrow	Saturday June 17th., 1995	C-3	-
93	Flood of the Century Had Southern Alberta Reeling	Saturday June 17th., 1995	C-4, C-5	-
94	Damage Could Reach Milions	Saturday June 17th., 1995	C-6	-
95	Towns Bear Brunt of River's Might	Saturday June 17th., 1995	C-6	-
96	Rural Neighbors Shoulder the Work	Saturday June 17th., 1995	C-6	-
97	Response Overwhelms Mayor	Saturday June 17th., 1995	C-7	-
98	It Could Had Been Worse	Saturday June 17th., 1995	C-8	-
99	City Gravel Firms Swert Away	Saturday June 17th., 1995	C-8	-
100	Reflections of the Flood of 1995	Wednesday June 21st., 1995	A-5	Letter to the Editor
102	Flood Post Mortem	Friday June 23 rd., 1995	A-4	-
103	Fort Survives Siege	Wednesday June 28., 1995	A-2	-
210	Province Vows to Install New Flood Warning	Friday March 8th., 1996	A-3	-
260	High Water: One Year Later	Friday June 7th., 1996	A-1	-
394	Water, Water Everywhere	Saturday May 3rd., 1997	A-1	-

***Days Missing From December, 2000: 19,22, 25, 30, 31**

TABLE B-5.1 NEWSPAPER ARTICLES SIGNIFICANT FOR THE RESEARCH Cont.

THE REGINA LEADER POST

Number	Name of Article	Date of Publication	Page	Description
	LETHBRIDGE			
	General Articles			
1	Trial Begins	Tuesday September 12th., 1995	-	About a Murder in Lethbridge
2	Bullets Match	Thursday September 14th., 1995	-	-
3	Free to Kill	Saturday July 20th., 1996	Section D	John Crawford Killed a Woman in Lethbridge. The Parole System Let Him Walk Out of Prison, He Killed Again on Saskatoon
4	2, 4-D Falling from the Lethbridge Sky	Friday February 26th., 1999	-	Study Finds Levels 10 to 50 Times Higher than at Other Areas in Canada
5	Shaking Find Near Lethbridge	Wednesday July 28th., 1999	A-2	About an Alligator Found in the Oldman River Valley

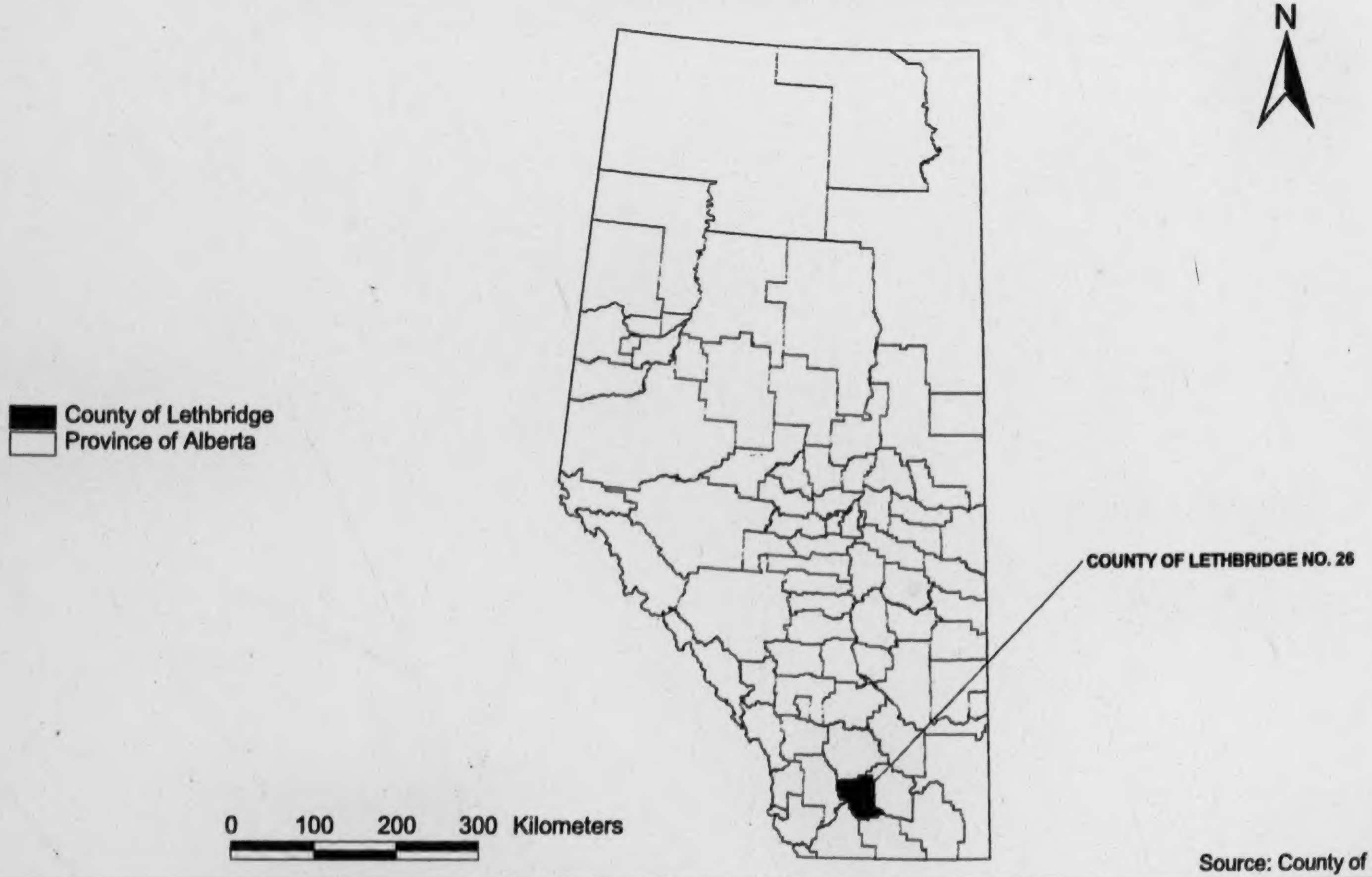
THE CALGARY HERALD

Number	Name of Article	Date of Publication	Page	Description
	LETHBRIDGE			
	General Articles			
1	Taber Murder Not Guilty Plea Entered Crime	Tuesday May 16th., 1995	-	About a Murder in Lethbridge
2	Alberta Battling Wild Rivers	Wednesday June 7th., 1995	-	Floods in the Lethbridge Area
3	Water, Water Everywhere	Thursday June 8th., 1995	-	Floods in the Lethbridge Area
4	Town Pintches into the Battle Raging River	Thursday June 8th., 1995	-	Floods in the Lethbridge Area
5	Water Causes Havoc in Pincher Creek Area	Thursday June 8th., 1995	-	Floods in the Lethbridge Area
6	Swollen City Rivers Leave their Mark	Thursday June 8th., 1995	-	Floods in the Lethbridge Area
7	Sewer Plant Under Water	Friday June 9th., 1995	B-12	Floods in the Lethbridge Area
8	Lethbridge Doctors Vote in Favor of Work-to-Rule Action	Friday August 25th., 1995	A-4	-
9	Lethbridge? Redneck? Give Us a Break	Thursday October 19th., 1995	-	Letter to Editor
10	Two Reported Killed in Standoff	Tuesday October 29th., 1996	A-6	-
11	Mood of Alberta, Winds of Change Blowing Uncertain in Pincher Creek	Sunday February 2nd., 1997	-	Windmills Seen Keys to Future
12	Lethbridge Council Gives Zoning Approval to Hog Plant	Wednesday July 30th., 1997	C-9	-
13	Lethbridge Hog Plant Faces Zoning Battle	Saturday August 30th., 1997	-	-
14	Pincher Creek Generating New Hope for Its Windmills	Saturday December 06th., 1997	-	-
15	City Eyes Switch to Wind Power	Saturday December 06th., 1997	-	-
16	Explosives Found in Vehicle Parked on Lethbridge Street	Wednesday January 14th., 1998	B-5	-
17	Shaughnessy Will Get Catholic High School	Saturday February 28th., 1998	-	-
18	Controversial Hog Plant in Jeopardy Says Owner	Saturday February 14th., 1998	A-4	-
19	Taiwanese Blame Delays for Cancelled Hog Plant	Saturday March 21st., 1998	-	-
20	Lethbridge Petition Targets Feedlot Tax	Saturday August 1st., 1998	A-4	-
21	McCain to Plant Potato Factory Near Coaldale	Friday January 8th., 1999	-	-
22	E. Coli Fears Prompt Appeal by Feedlot Neighbors	Thursday July 13th., 2000	A-9	-
23	Claresholm Landfill Opens this Fall	Friday July 21st., 2000	B-7	-
24	Environmental List Cheer Axing of Feedlot Plant	Saturday August 12th., 2000	B-4	-
25	Landfill Will Hold 100 Years of Trash	Thursday November 30th., 2000	B-6	Claresholm Area

APPENDIX C

SECTION C-1

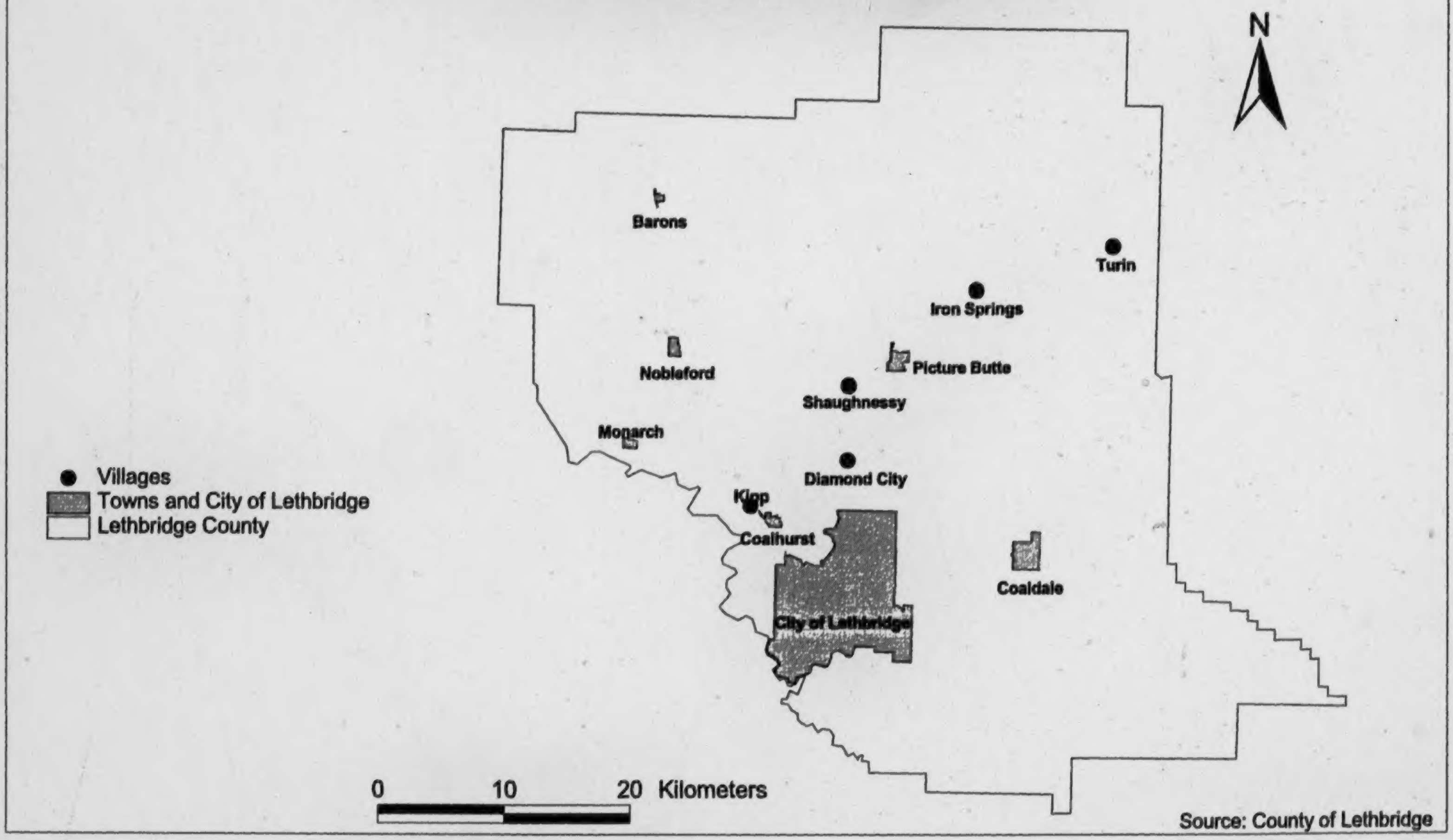
Figure C-1.1 County of Lethbridge Location



N
County of Lethbridge
Province of Alberta
COUNTY OF LETHBRIDGE NO. 26
0 100 200 300 Kilometers

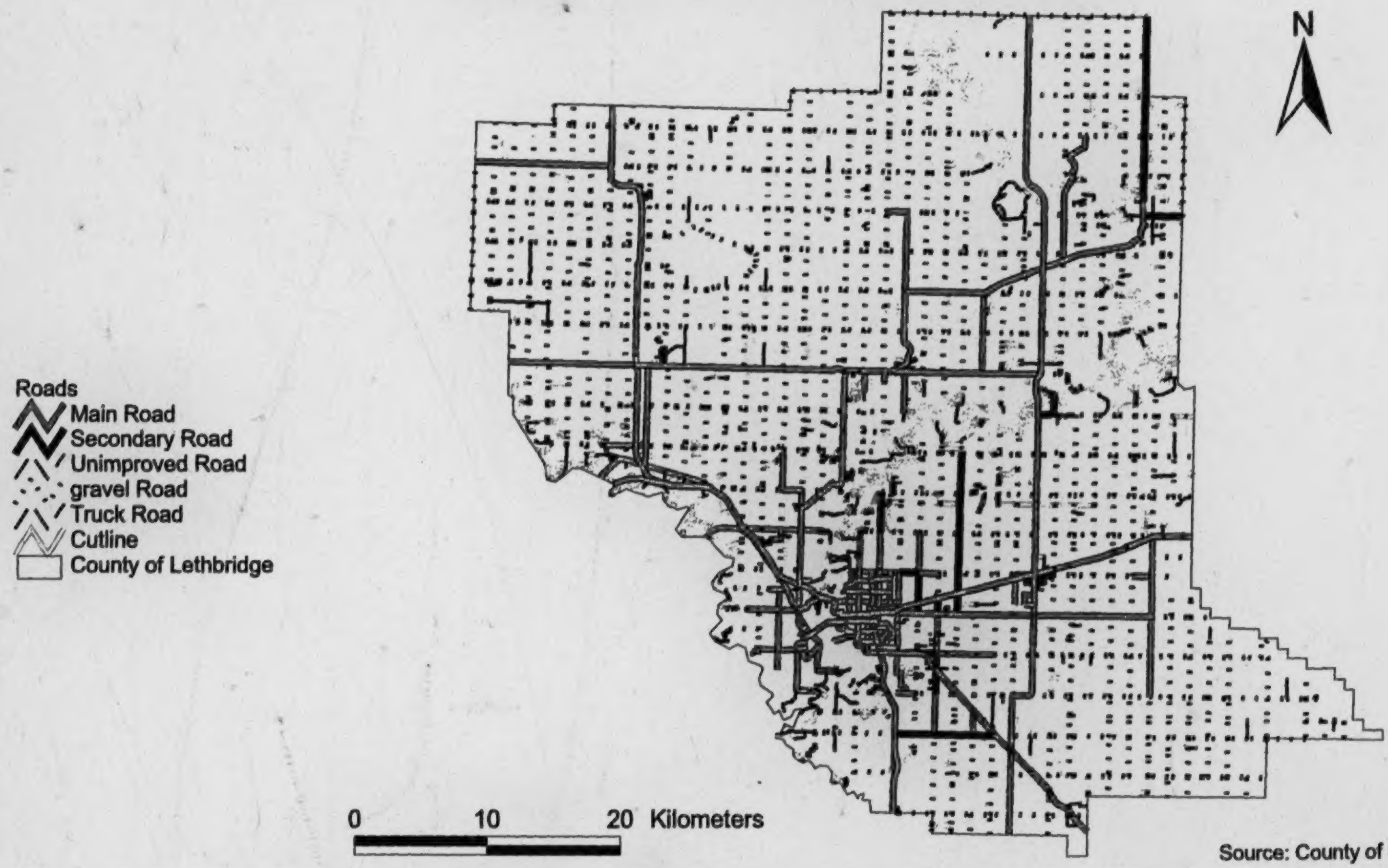
Source: County of Lethbridge

Figure C-1.2 Cities, Towns, and Villages in the County of Lethbridge


N
Barons
Turin
Iron Springs
Nobleford
Picture Butte
Shaughnessy
Monarch
Diamond City
Kipp
Coalhurst
Coaldale
City of Lethbridge
● Villages
▨ Towns and City of Lethbridge
☐ Lethbridge County
0
10
20 Kilometers

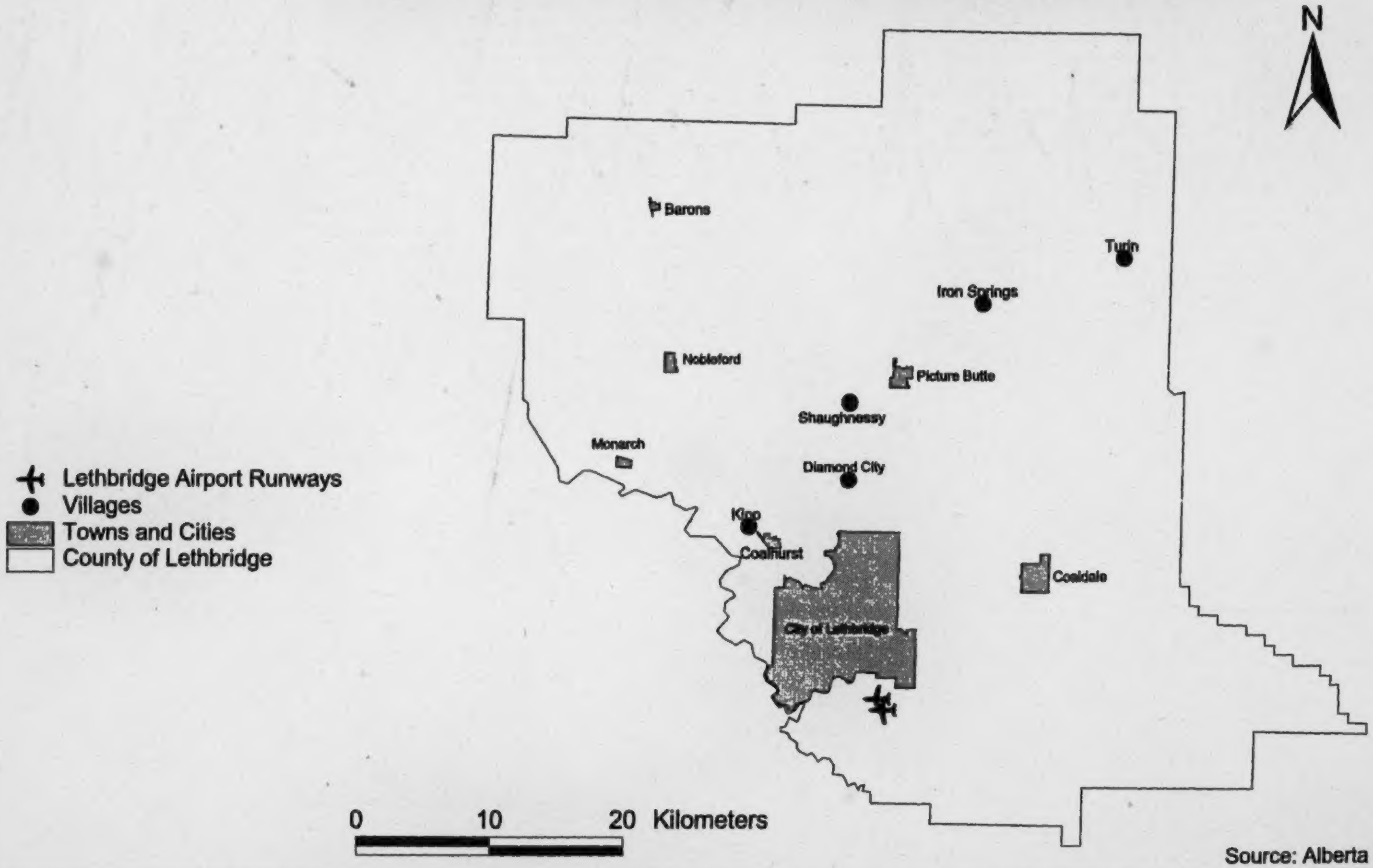
Source: County of Lethbridge

Figure C-1.3 County Roads


N
Roads
Main Road
Secondary Road
Unimproved Road
gravel Road
Truck Road
Cutline
County of Lethbridge
0
10
20
Kilometers

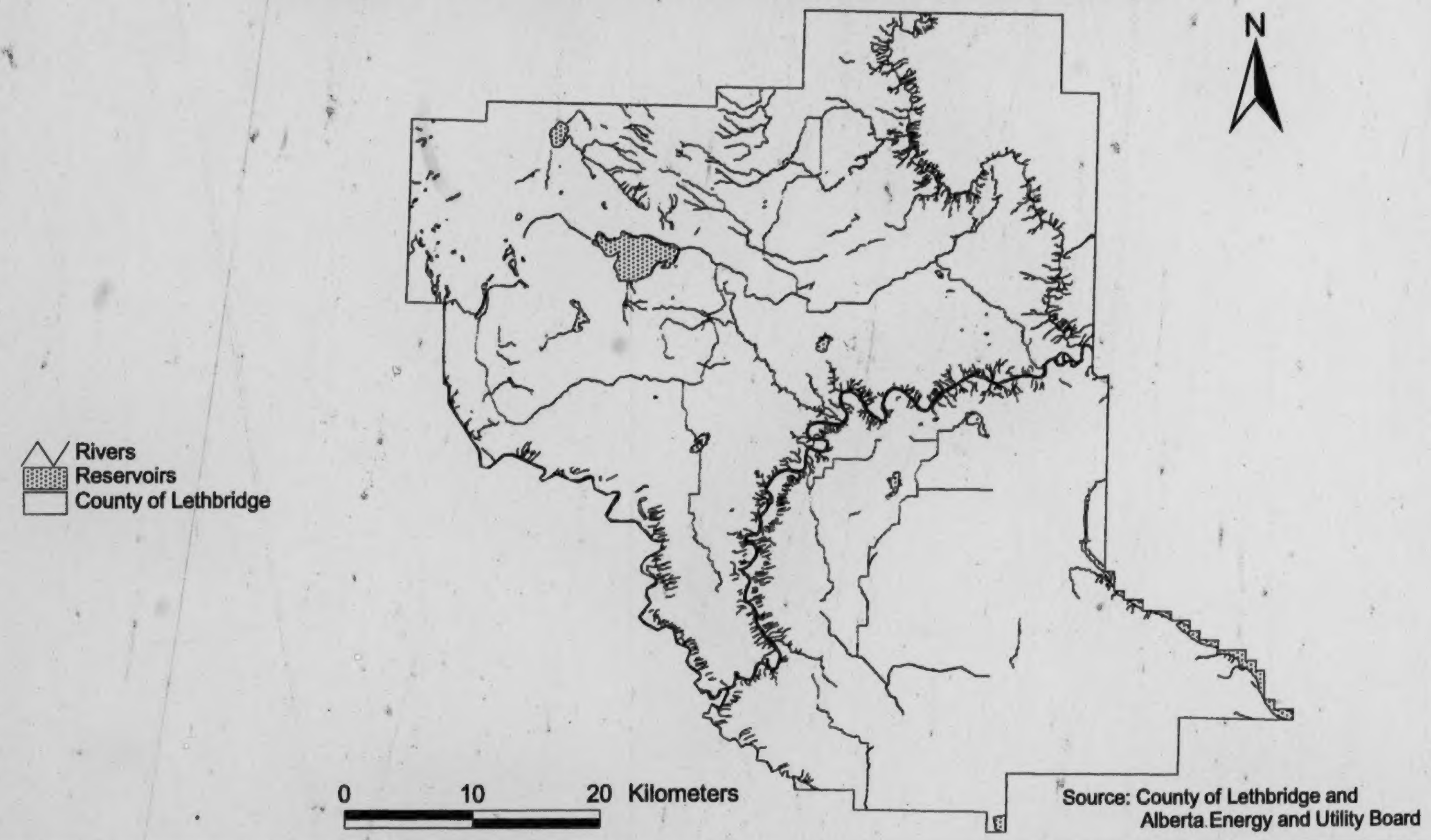
Source: County of Lethbridge

Figure C-1.4 County of Lethbridge Airways


N
Barons
Turin
Iron Springs
Nobleford
Picture Butte
Shaughnessy
Monarch
Diamond City
Kipp
Coalhurst
Coaldale
City of Lethbridge
Lethbridge Airport Runways
Villages
Towns and Cities
County of Lethbridge
0
10
20
Kilometers

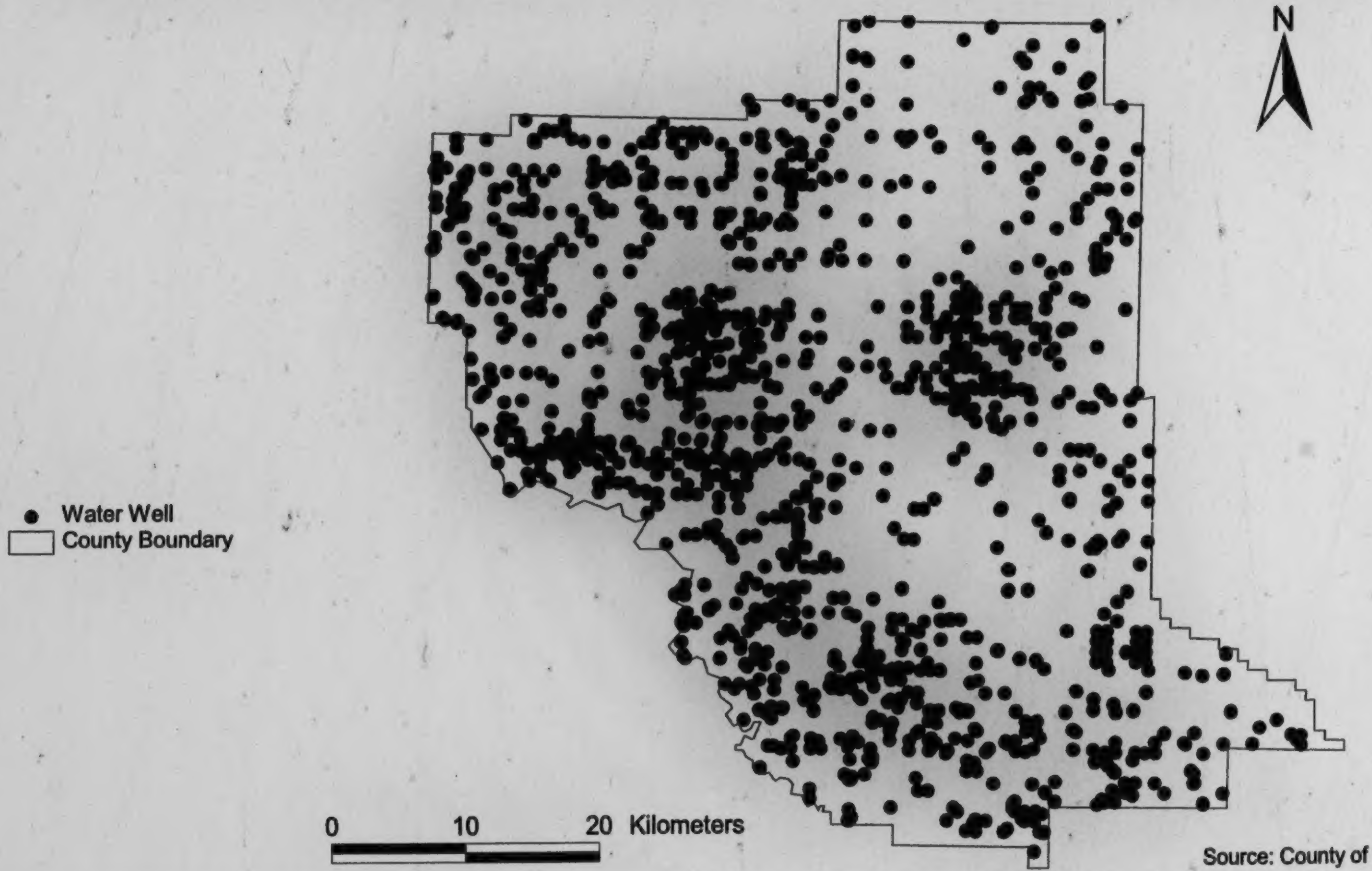
Source: Alberta Environment

Figure C-1.5 County of Lethbridge Hydrology


N
Rivers
Reservoirs
County of Lethbridge
0
10
20 Kilometers

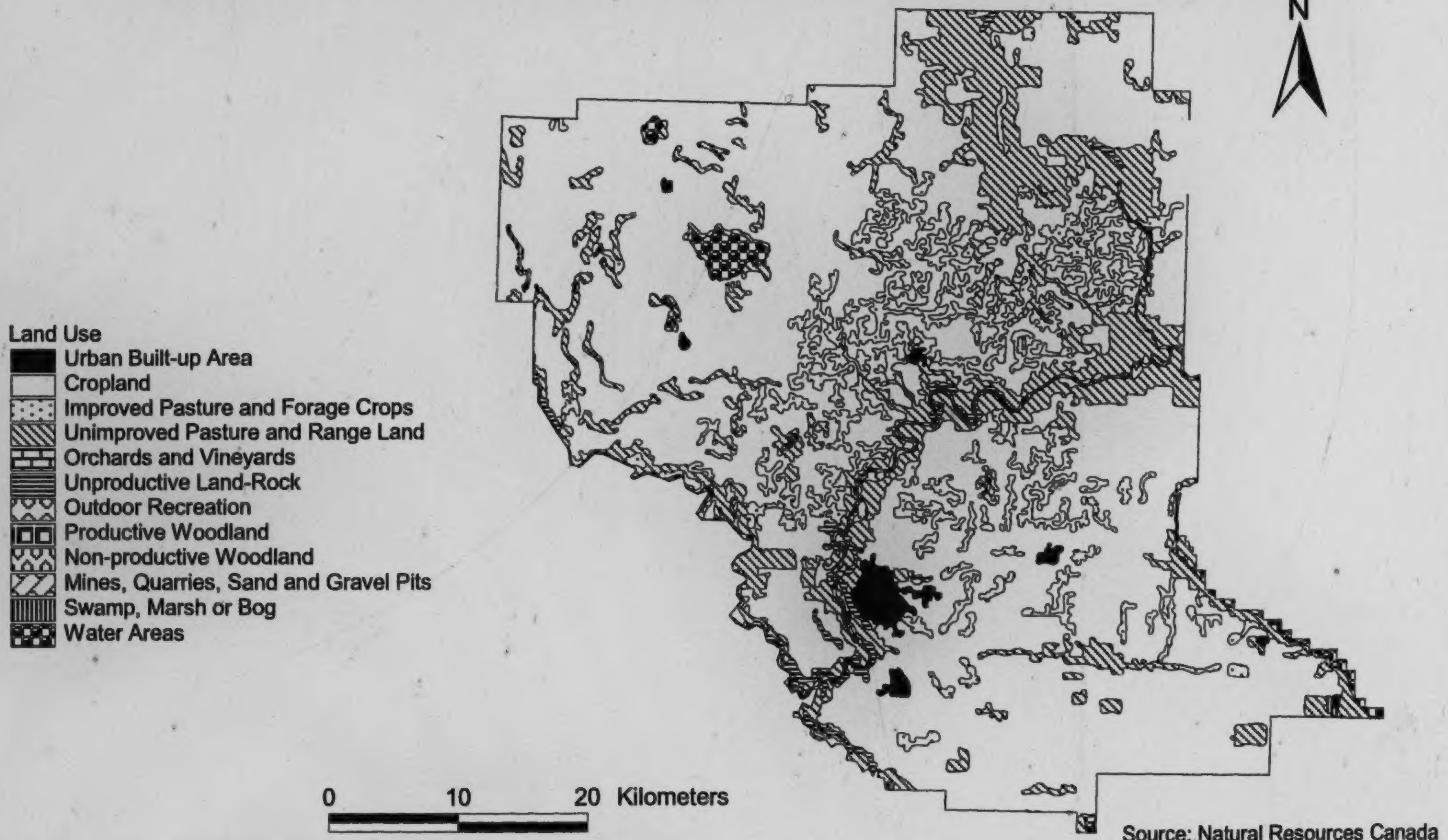
Source: County of Lethbridge and
Alberta Energy and Utility Board

Figure C-1.6 Groundwater Wells in The County of Lethbridge


N
● Water Well
▭ County Boundary
0
10
20 Kilometers

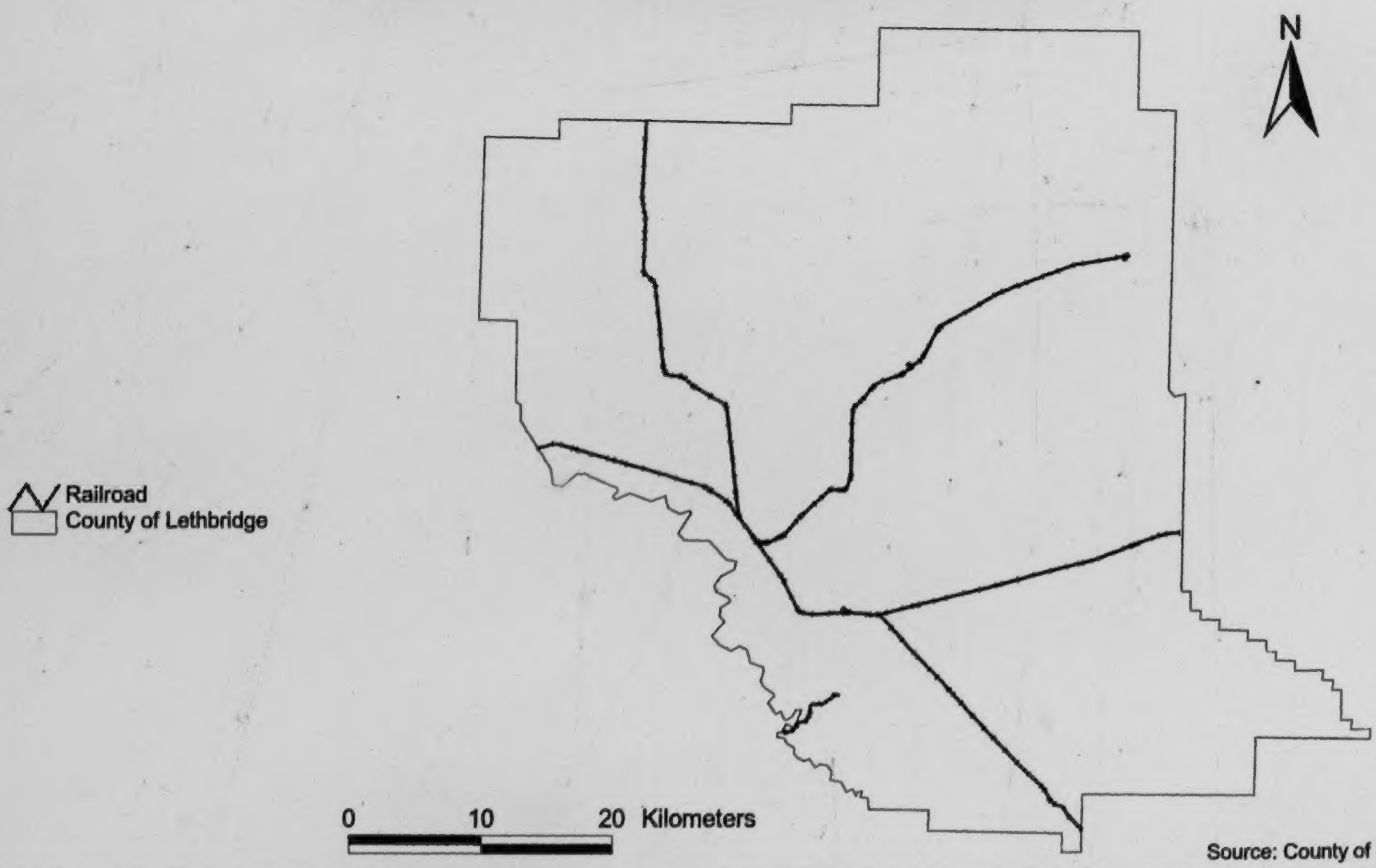
Source: County of Lethbridge

Figure C-1.7 County of Lethbridge Land Use Classification


N
Land Use
Urban Built-up Area
Cropland
Improved Pasture and Forage Crops
Unimproved Pasture and Range Land
Orchards and Vineyards
Unproductive Land-Rock
Outdoor Recreation
Productive Woodland
Non-productive Woodland
Mines, Quarries, Sand and Gravel Pits
Swamp, Marsh or Bog
Water Areas
0
10
20
Kilometers

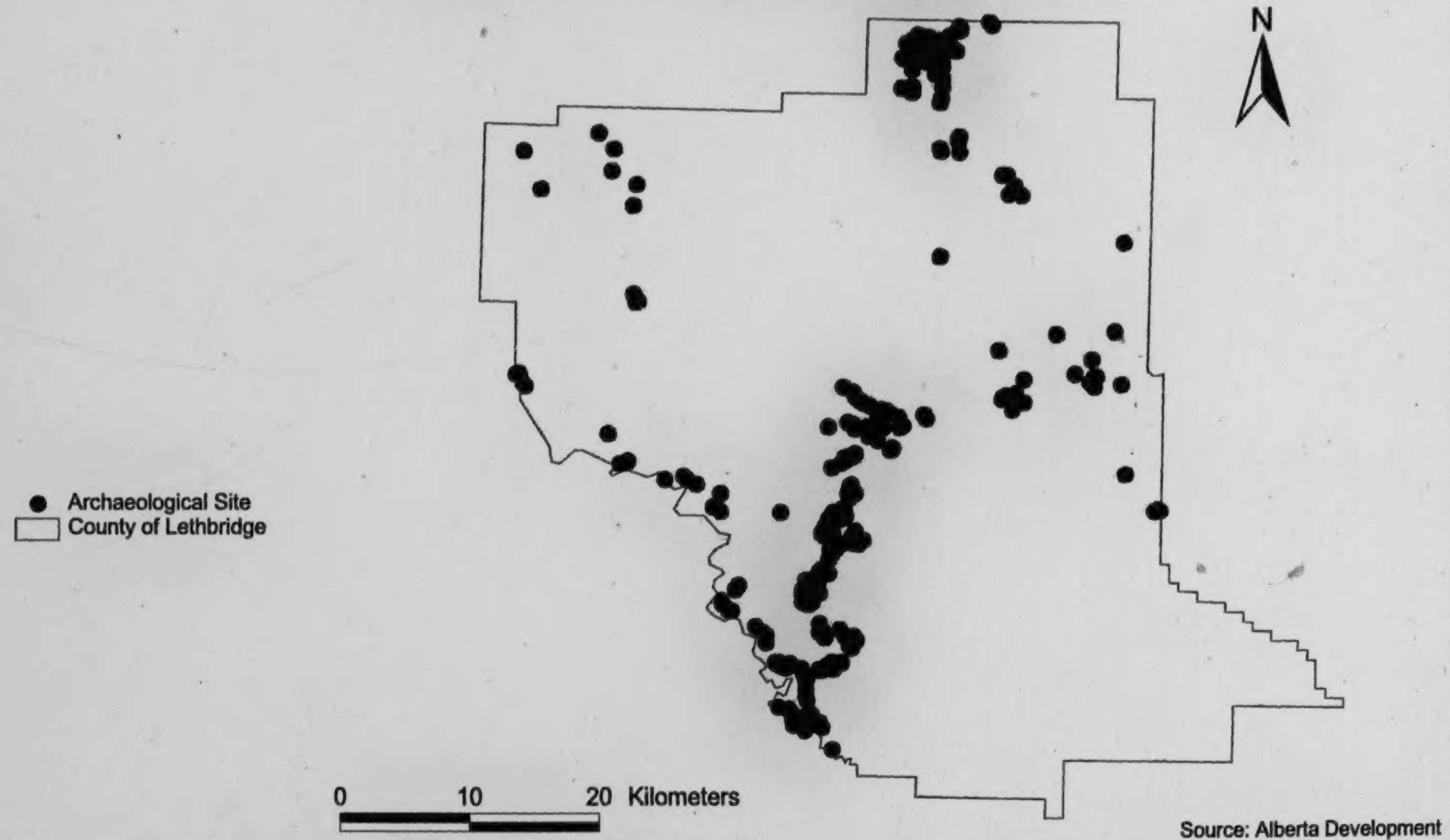
Source: Natural Resources Canada

Figure C-1.8 Railways in the County


N
Railroad
County of Lethbridge
0
10
20 Kilometers

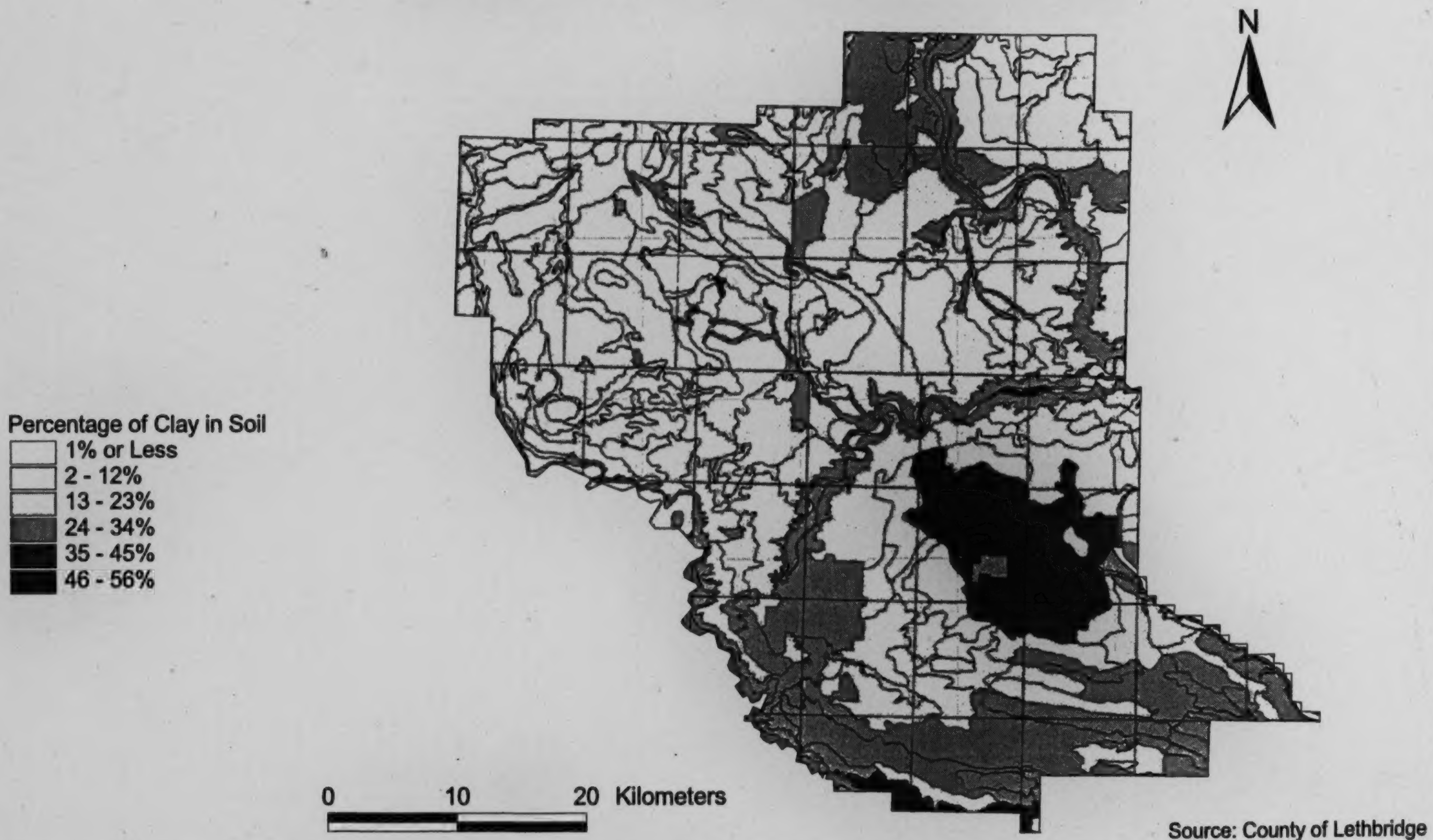
Source: County of Lethbridge

Figure C-1.9 Archaeological Sites


N
● Archaeological Site
▭ County of Lethbridge
0
10
20 Kilometers

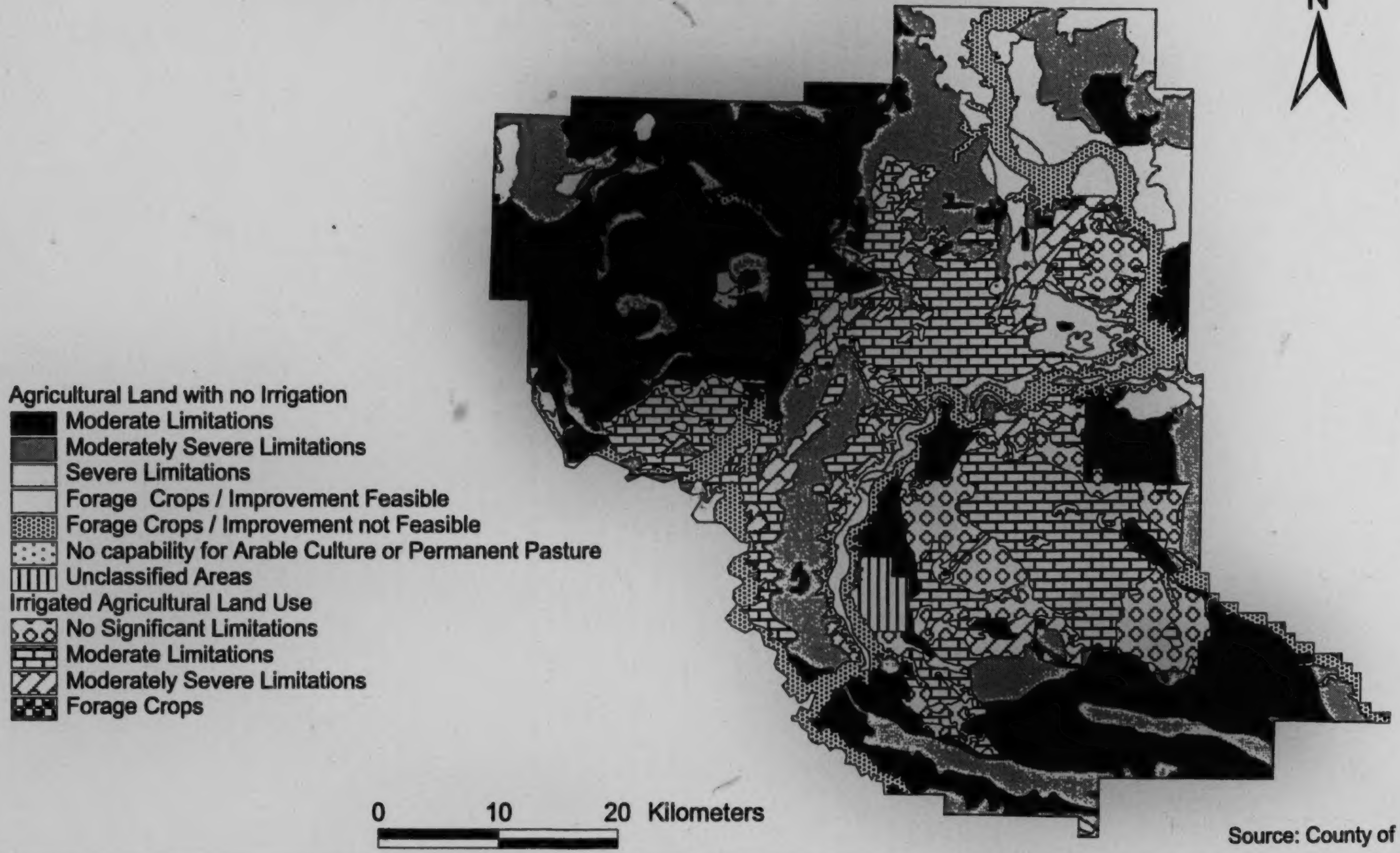
Source: Alberta Development

Figure C-1.10 Clay Content in Soil


N
Percentage of Clay in Soil
1% or Less
2 - 12%
13 - 23%
24 - 34%
35 - 45%
46 - 56%
0
10
20 Kilometers

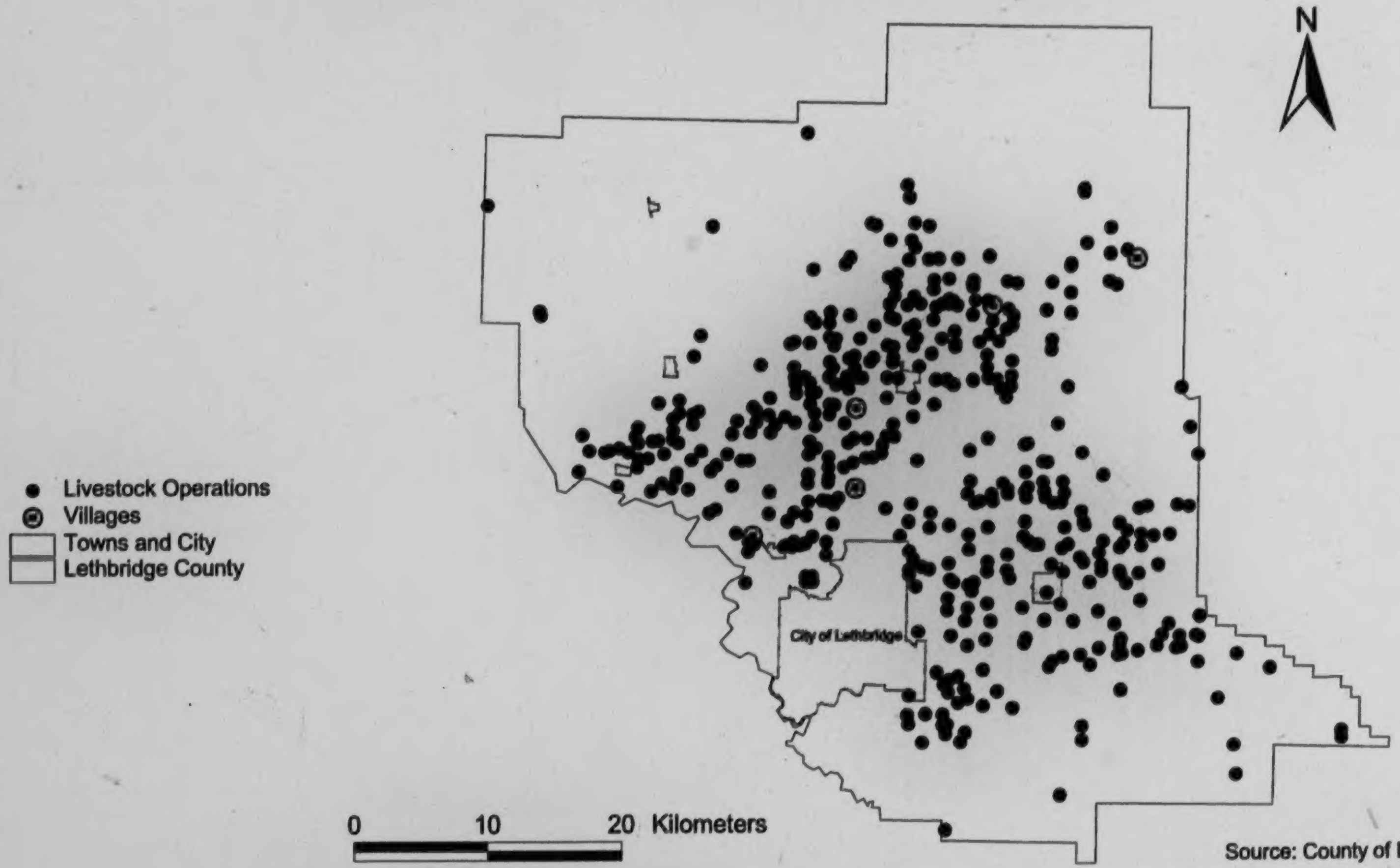
Source: County of Lethbridge

Figure C-1.11 County of Lethbridge Agricultural Land Use Classification


N
Agricultural Land with no Irrigation
■ Moderate Limitations
▨ Moderately Severe Limitations
☐ Severe Limitations
☐ Forage Crops / Improvement Feasible
▨ Forage Crops / Improvement not Feasible
▨ No capability for Arable Culture or Permanent Pasture
▥ Unclassified Areas
Irrigated Agricultural Land Use
▨ No Significant Limitations
▤ Moderate Limitations
▧ Moderately Severe Limitations
▩ Forage Crops
0
10
20 Kilometers

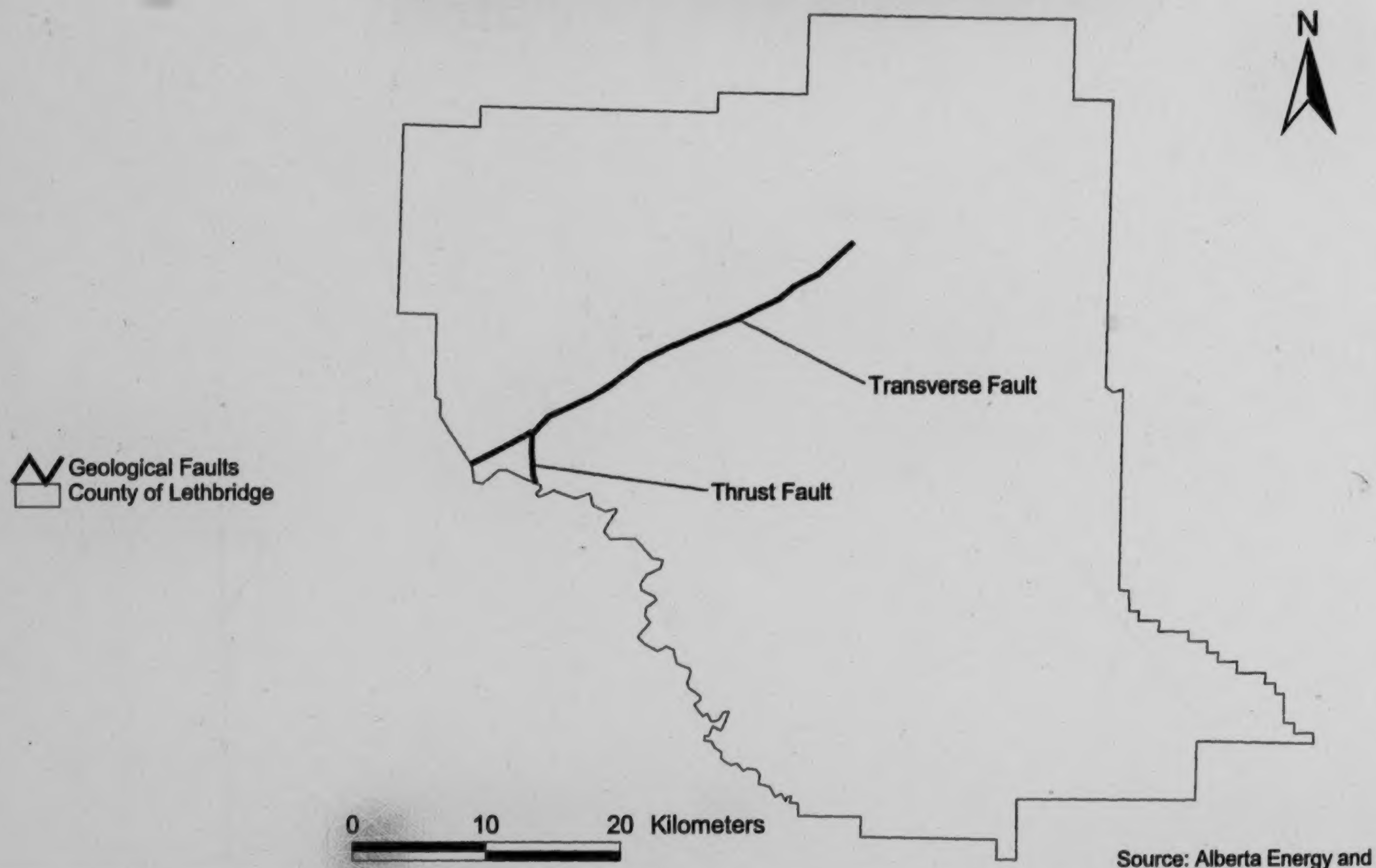
Source: County of Lethbridge

Figure C-1.12 Livestock Operations


N
City of Lethbridge
● Livestock Operations
◉ Villages
☐ Towns and City
☐ Lethbridge County
0
10
20 Kilometers

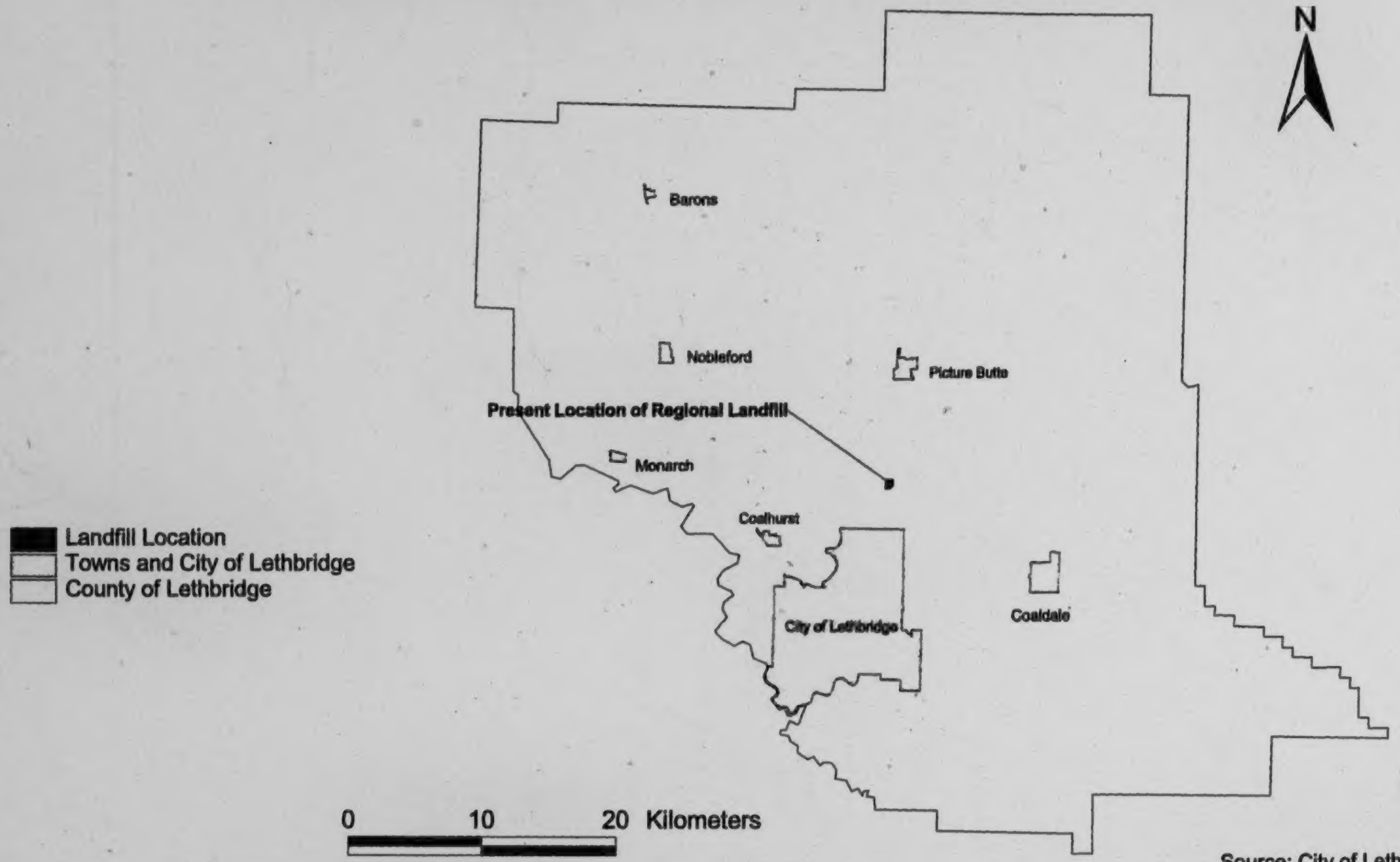
Source: County of Lethbridge

Figure C-1.13 Geological Faults


N
Transverse Fault
Thrust Fault
Geological Faults
County of Lethbridge
0
10
20
Kilometers

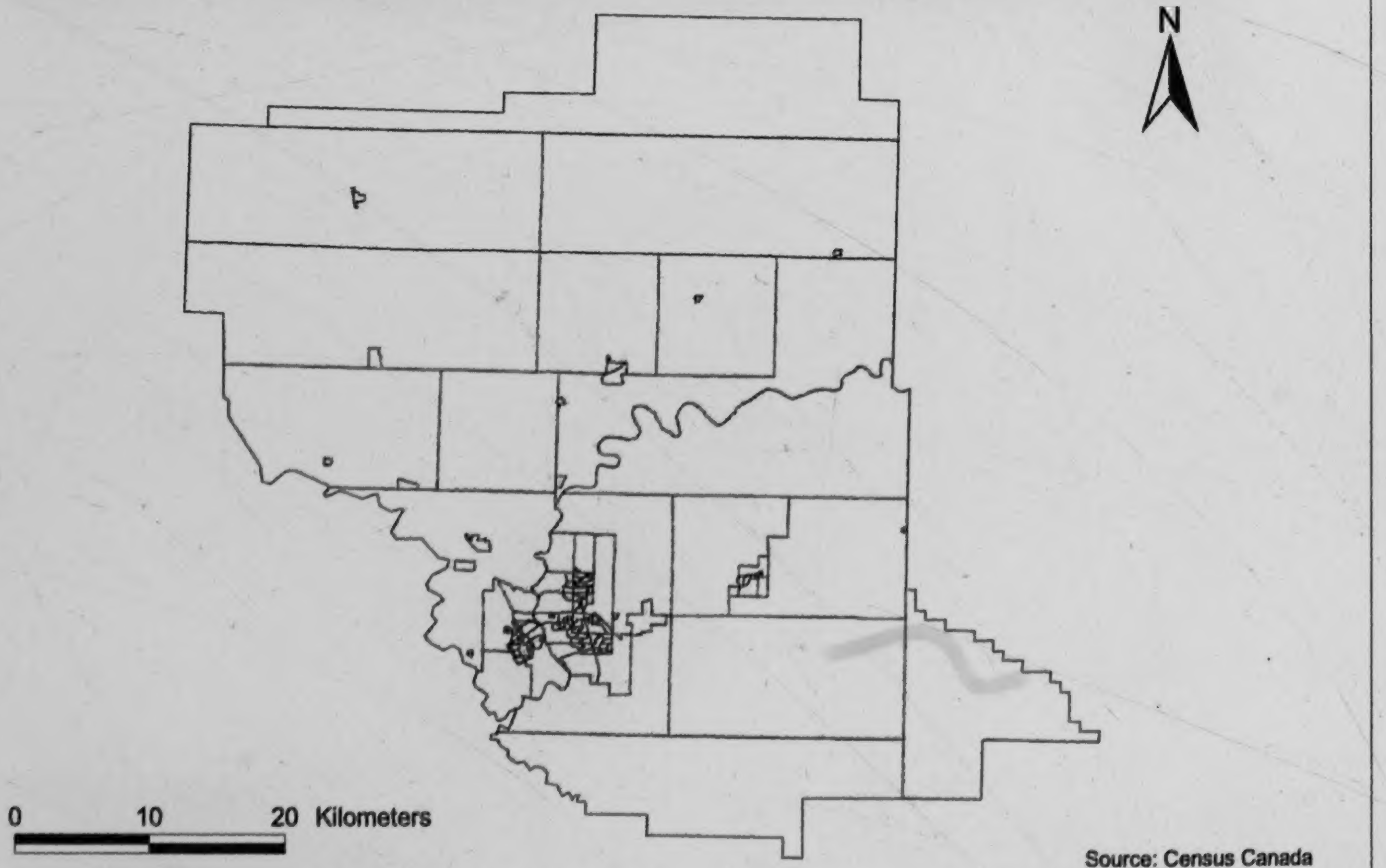
Source: Alberta Energy and Utility Board

Figure C-1.14 Location of the Regional Landfill


N
Barons
Nobleford
Picture Butte
Present Location of Regional Landfill
Monarch
Coalhurst
City of Lethbridge
Coaldale
■ Landfill Location
☐ Towns and City of Lethbridge
☐ County of Lethbridge
0
10
20
Kilometers

Source: City of Lethbridge

Figure C-1.15 Distribution of Census Enumeration Areas


N
0
10
20 Kilometers

Source: Census Canada

APPENDIX C

SECTION C-2

Figure C-2.1 Landfill Constraint 'Distance from a Major Community ' (450 m)

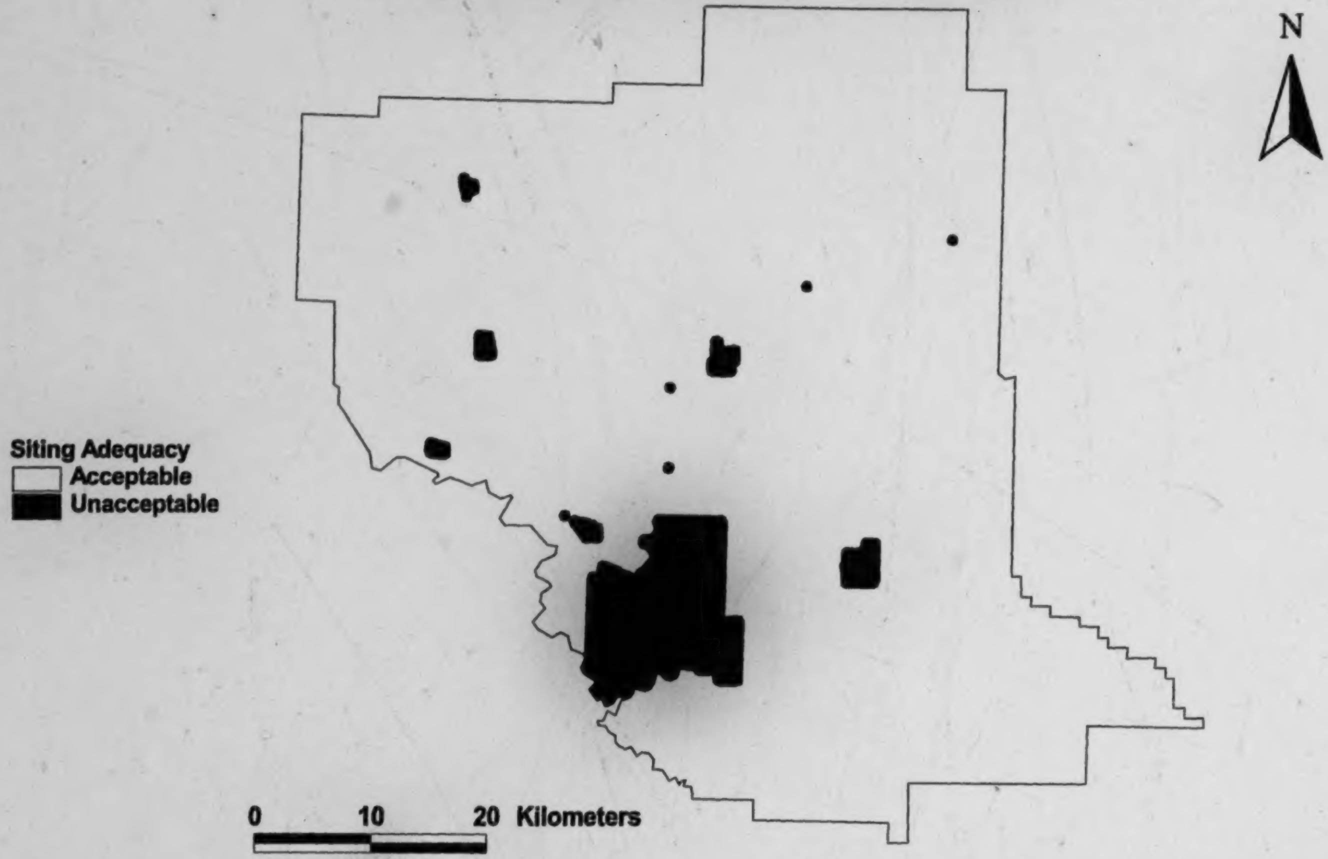

N
Siting Adequacy
Acceptable
Unacceptable
0
10
20
Kilometers

Figure C-2.2 Landfill Constraint 'Distance from an Airport Runway' (8 km)

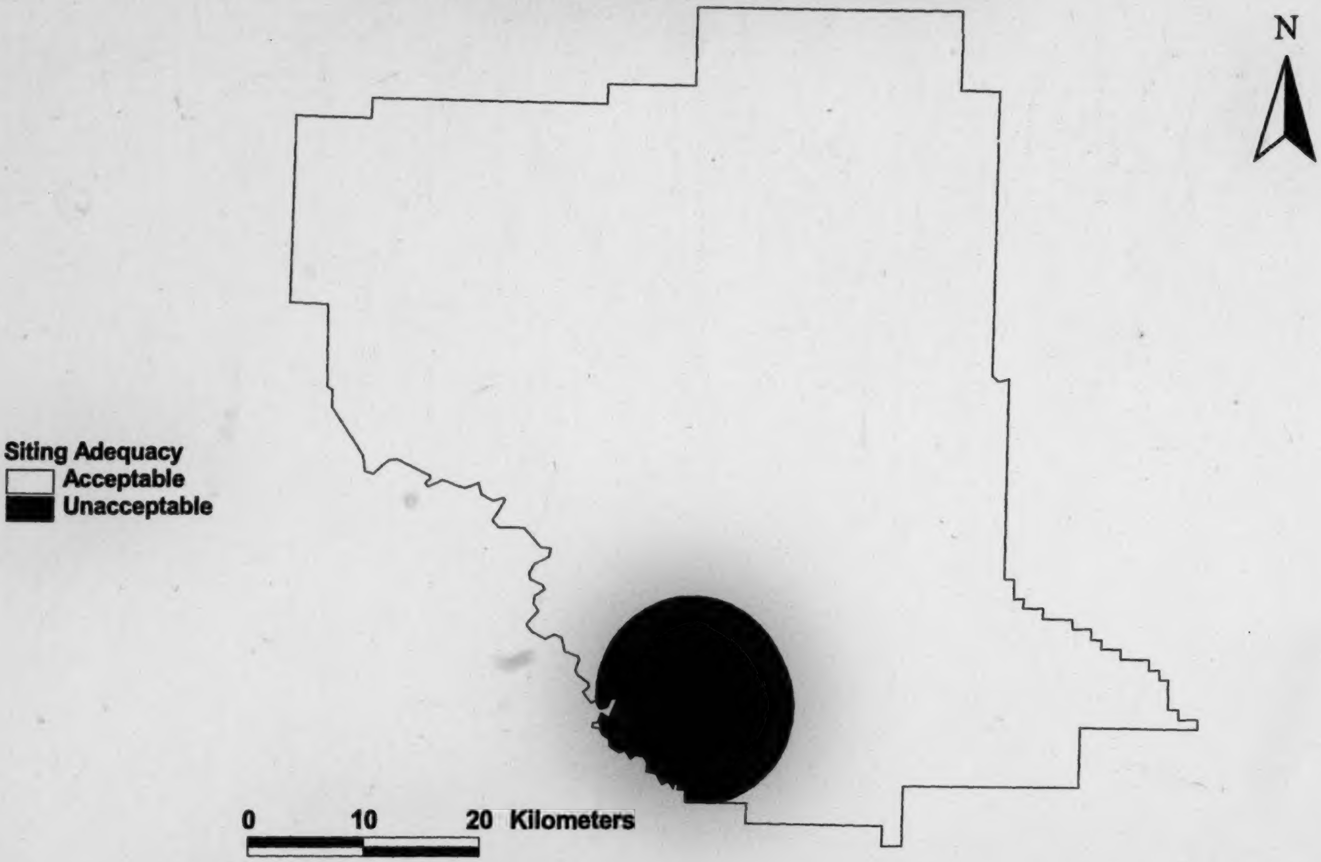

N
Siting Adequacy
Acceptable
Unacceptable
0
10
20 Kilometers

Figure C-2.3 Landfill Constraint 'Minimum Distance from a River or Permanent Body of Water' (800 m)

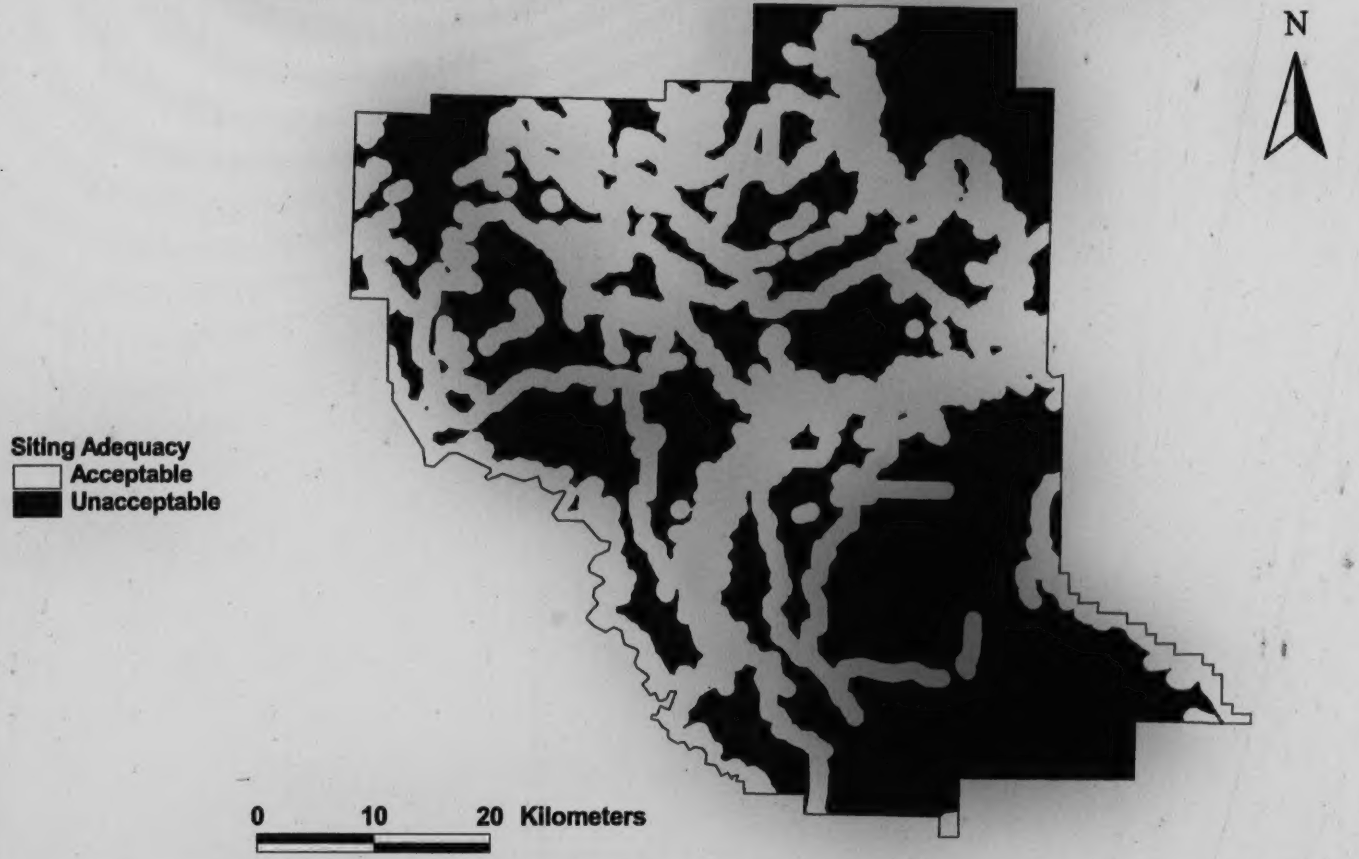

N
Siting Adequacy
▢ Acceptable
■ Unacceptable
0
10
20
Kilometers

Figure C-2.4 Landfill Constraint 'Minimum Distance from a Water Supply or Surface Water Intake' (1.6 km)

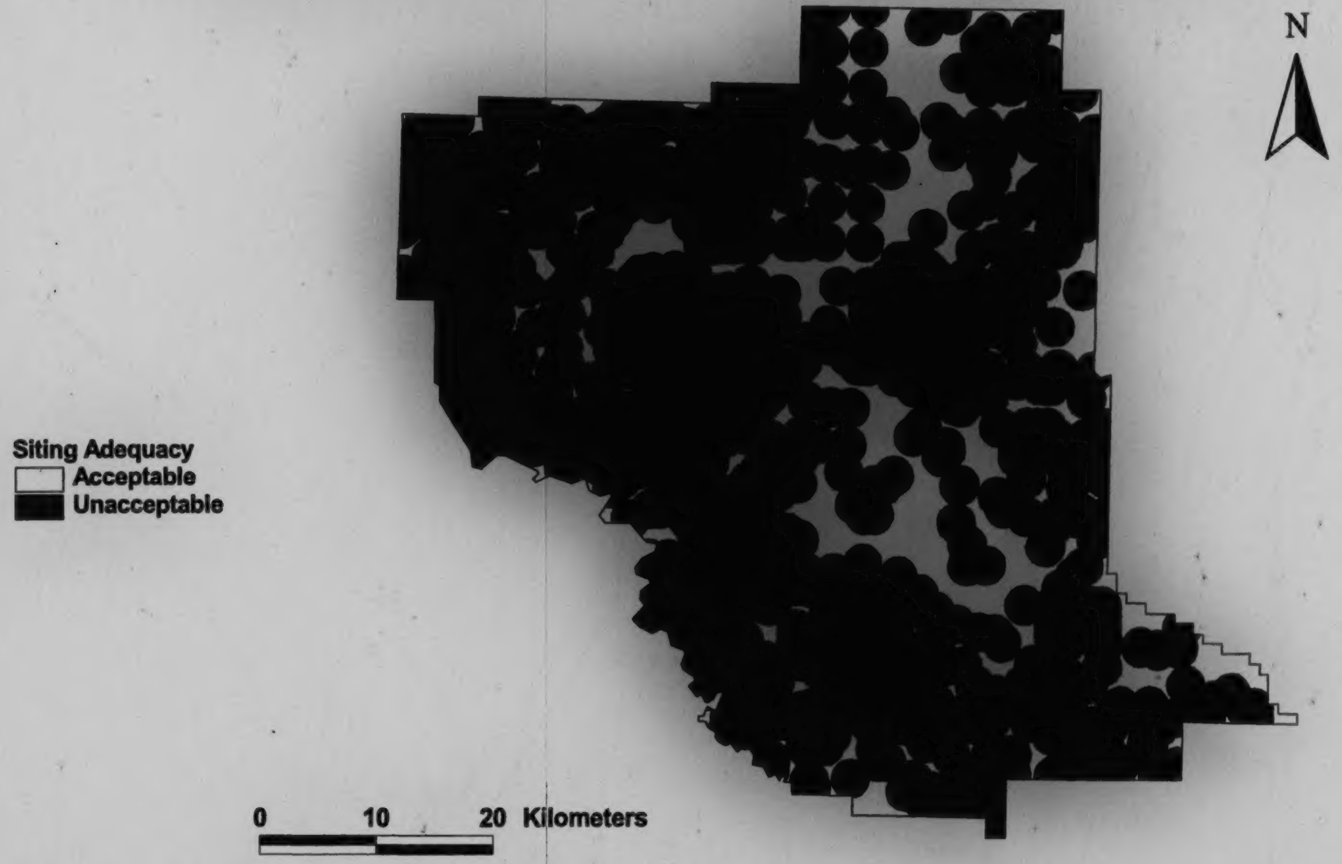

N
Siting Adequacy
☐ Acceptable
■ Unacceptable
0
10
20
Kilometers

Figure C-2.5 Landfill Constraint 'Facility Located Out of Recreational, Cultural, Aesthetic, Key Wild Life, or High Risk Natural Areas'

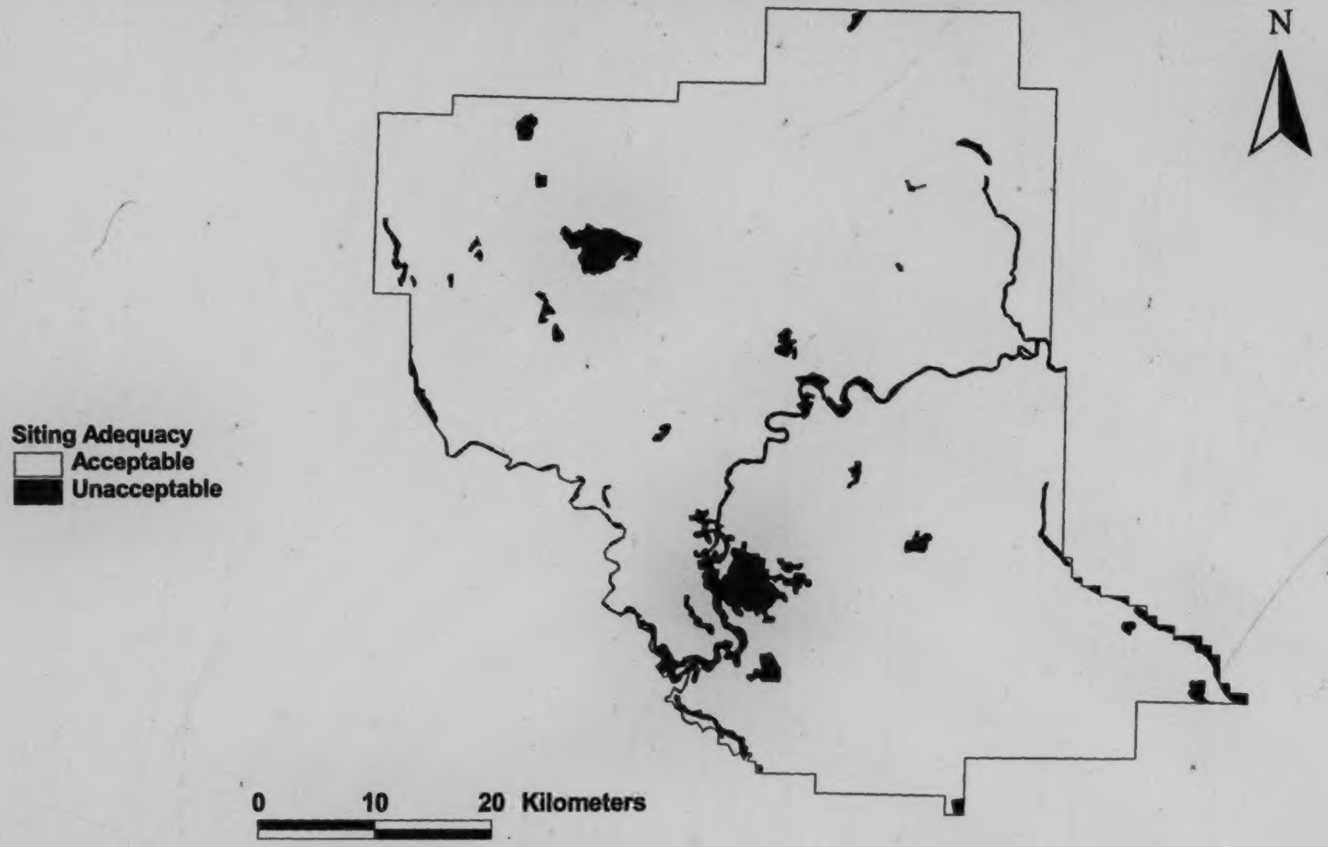

N
Siting Adequacy
Acceptable
Unacceptable
0
10
20 Kilometers

Figure C-2.6 Landfill Constraint 'Minimum Distance from a Railway Line' (500 m)

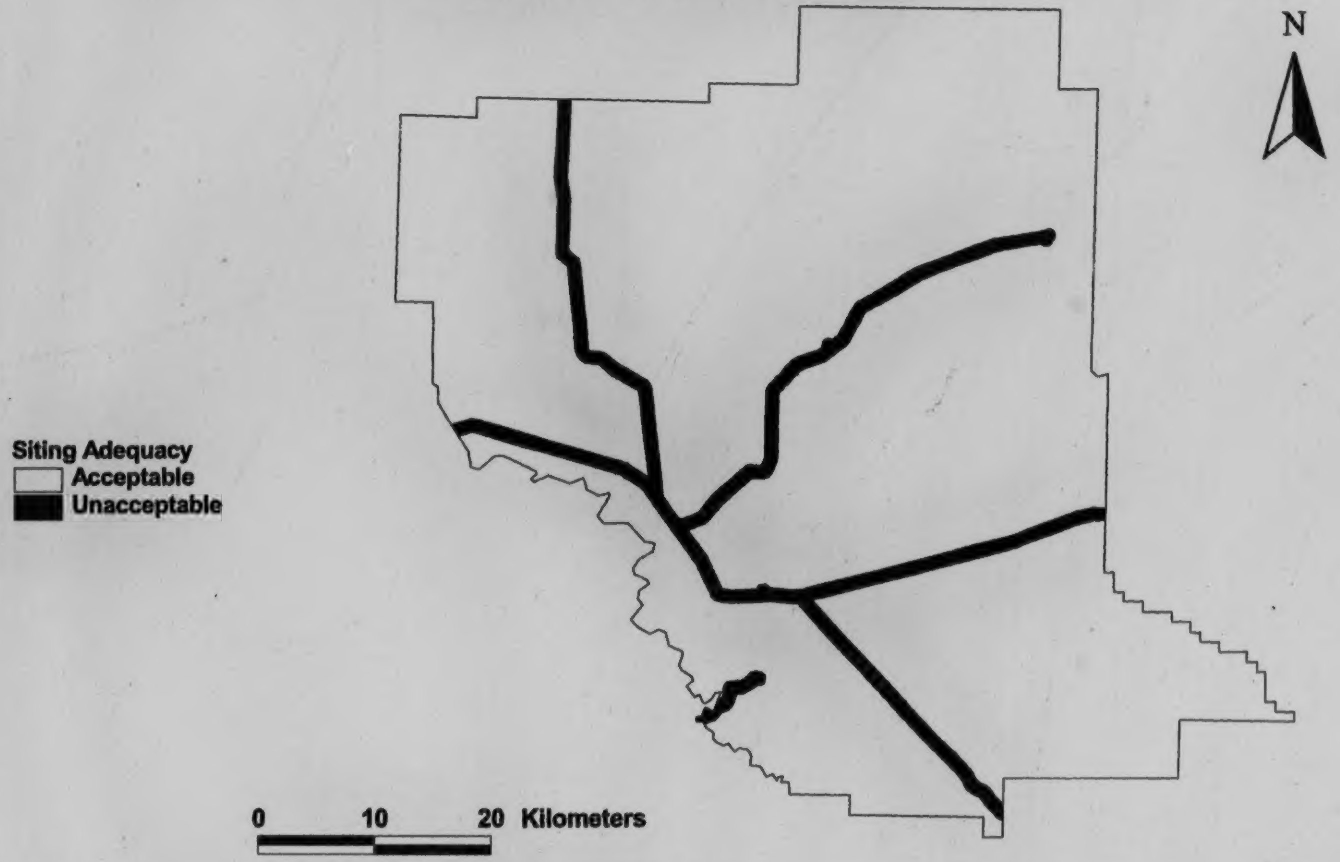

N
Siting Adequacy
Acceptable
Unacceptable
0
10
20 Kilometers

Figure C-2.7 Landfill Constraint 'Distance from an Archaeological Site' (500 m)

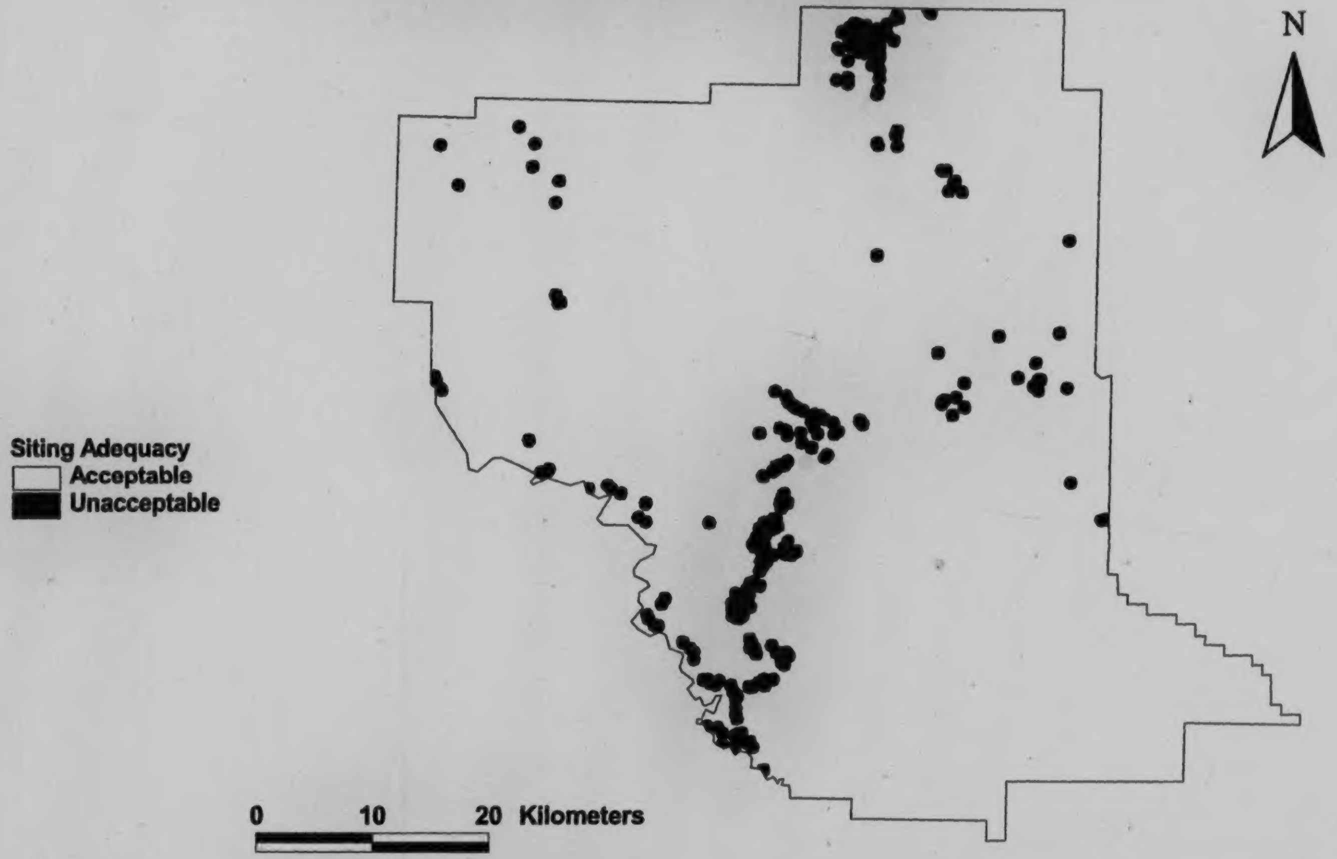

N
Siting Adequacy
Acceptable
Unacceptable
0
10
20
Kilometers

Figure C-2.8 Landfill Constraint 'Take Lowest Agricultural Land Uses'

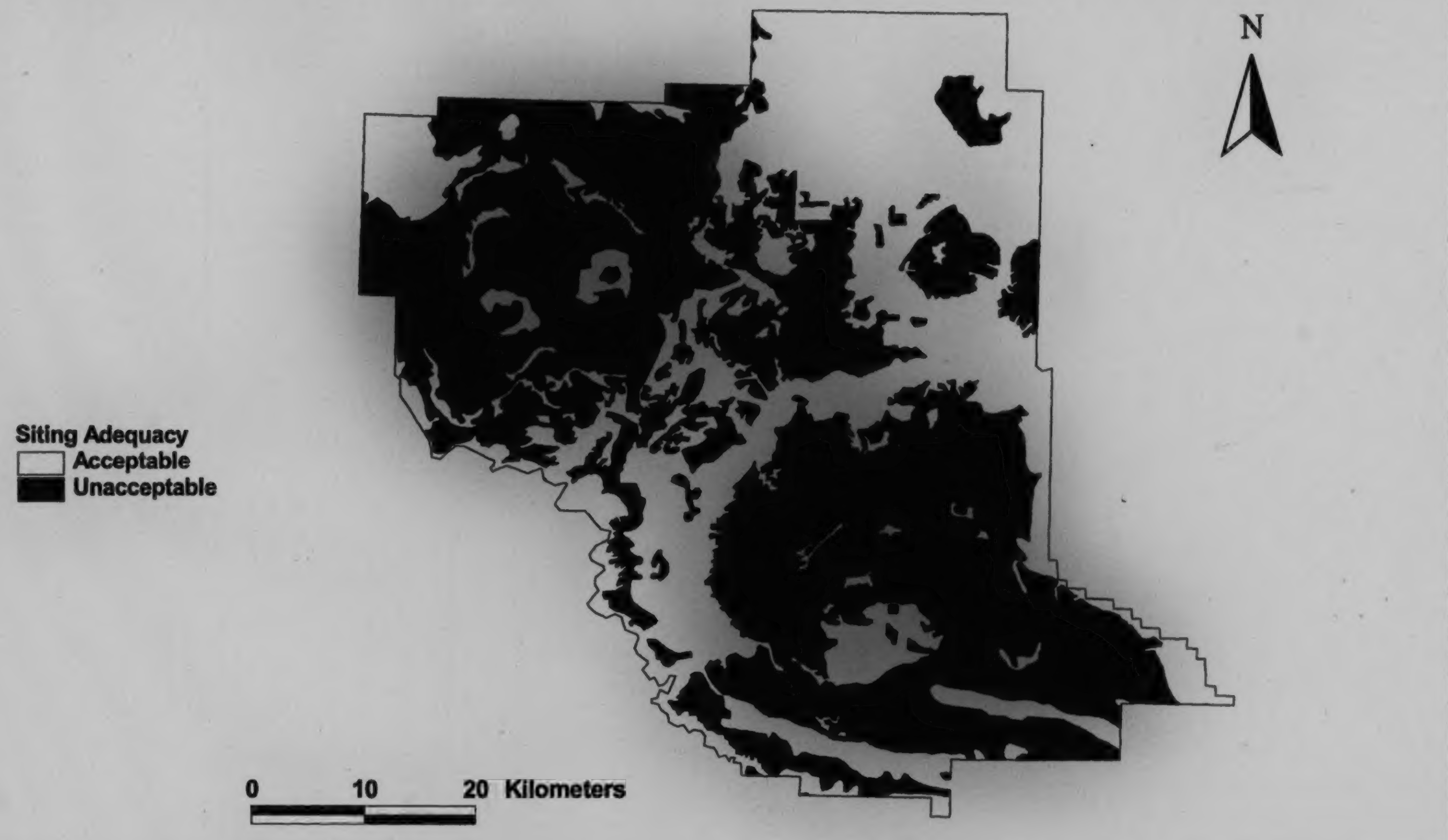

N
Siting Adequacy
Acceptable
Unacceptable
0
10
20 Kilometers

Figure C-2.9 Landfill Constraint 'Minimum Distance from a Geological Fault' (61 m)

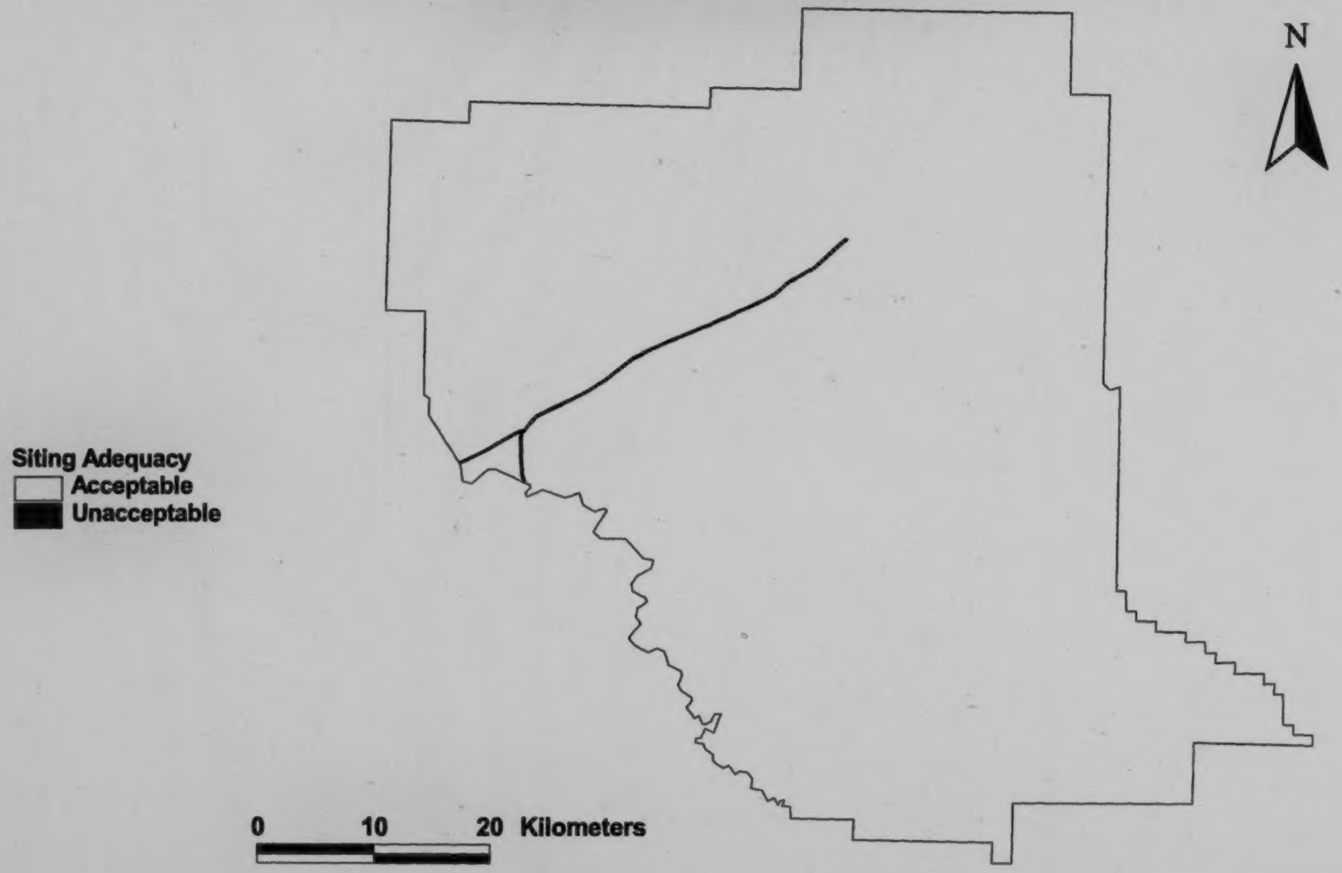

N
Siting Adequacy
☐ Acceptable
■ Unacceptable
0
10
20
Kilometers

Figure C-2.10 Landfill Constraint 'Air Quality Impacts' (500 m)

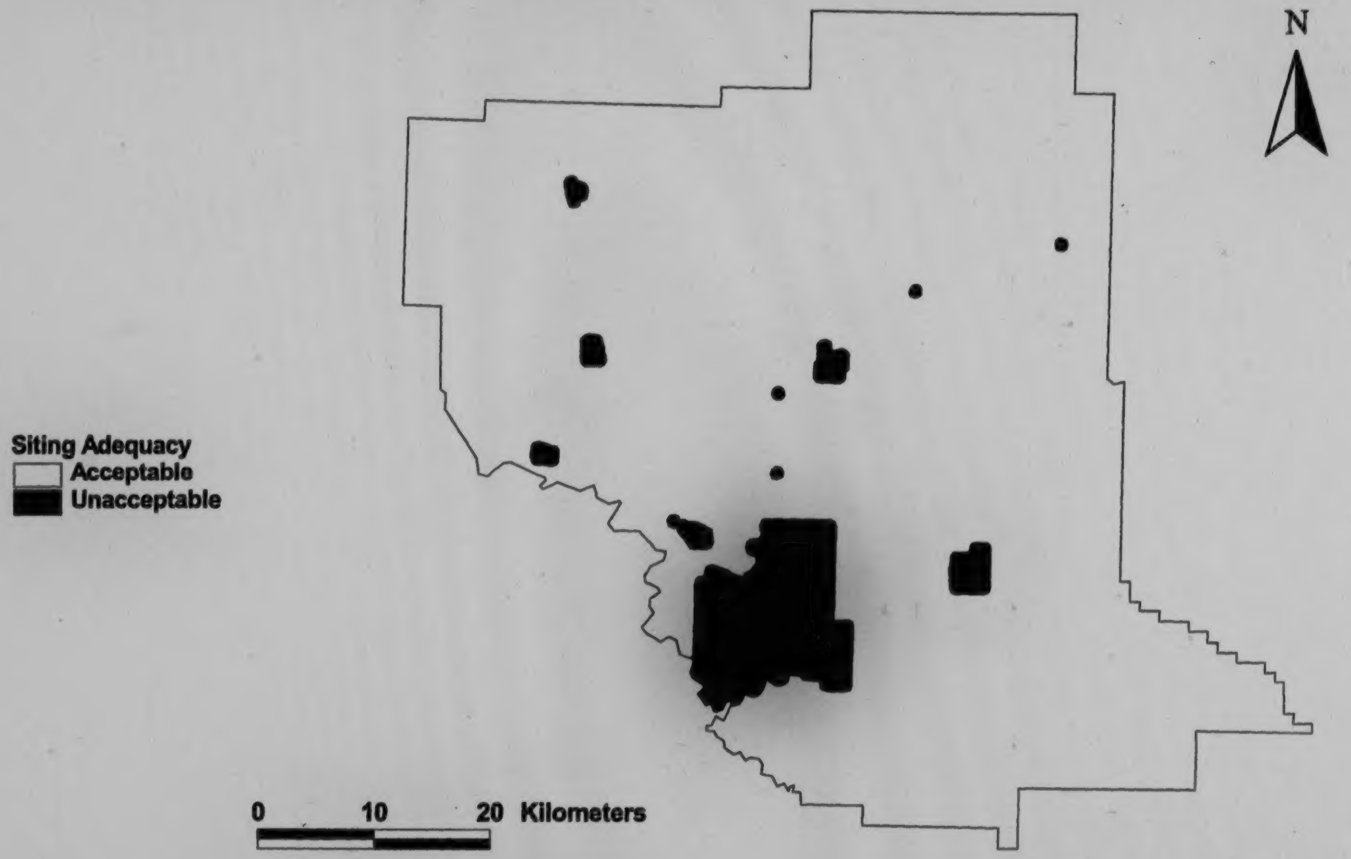

N
Siting Adequacy
Acceptable
Unacceptable
0
10
20
Kilometers

Figure C-2.11 Landfill Suitability Factor 'Odor'

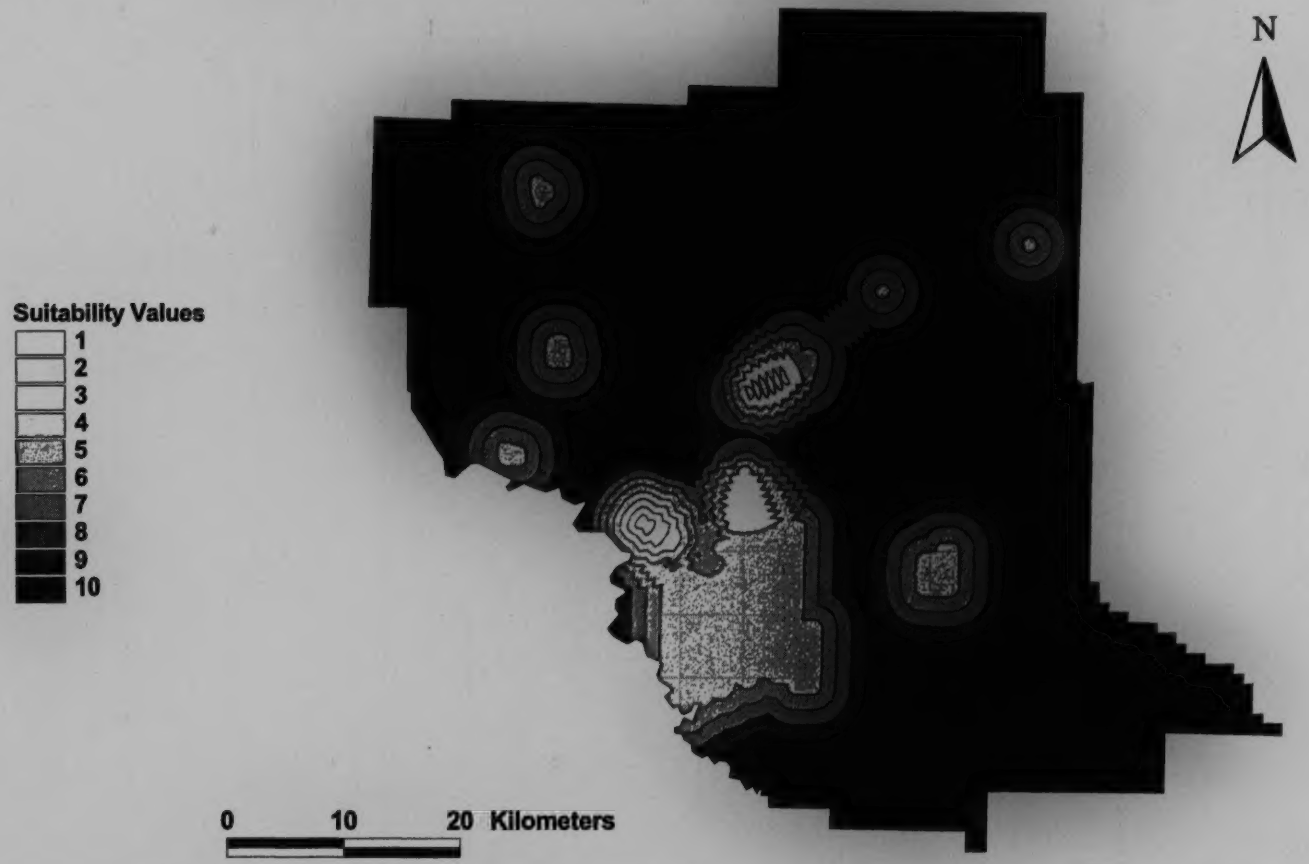

N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20
Kilometers

Figure C-2.12 Landfill Suitability Factor 'Facility Located in Areas which Soils Have a Higher Clay Content'

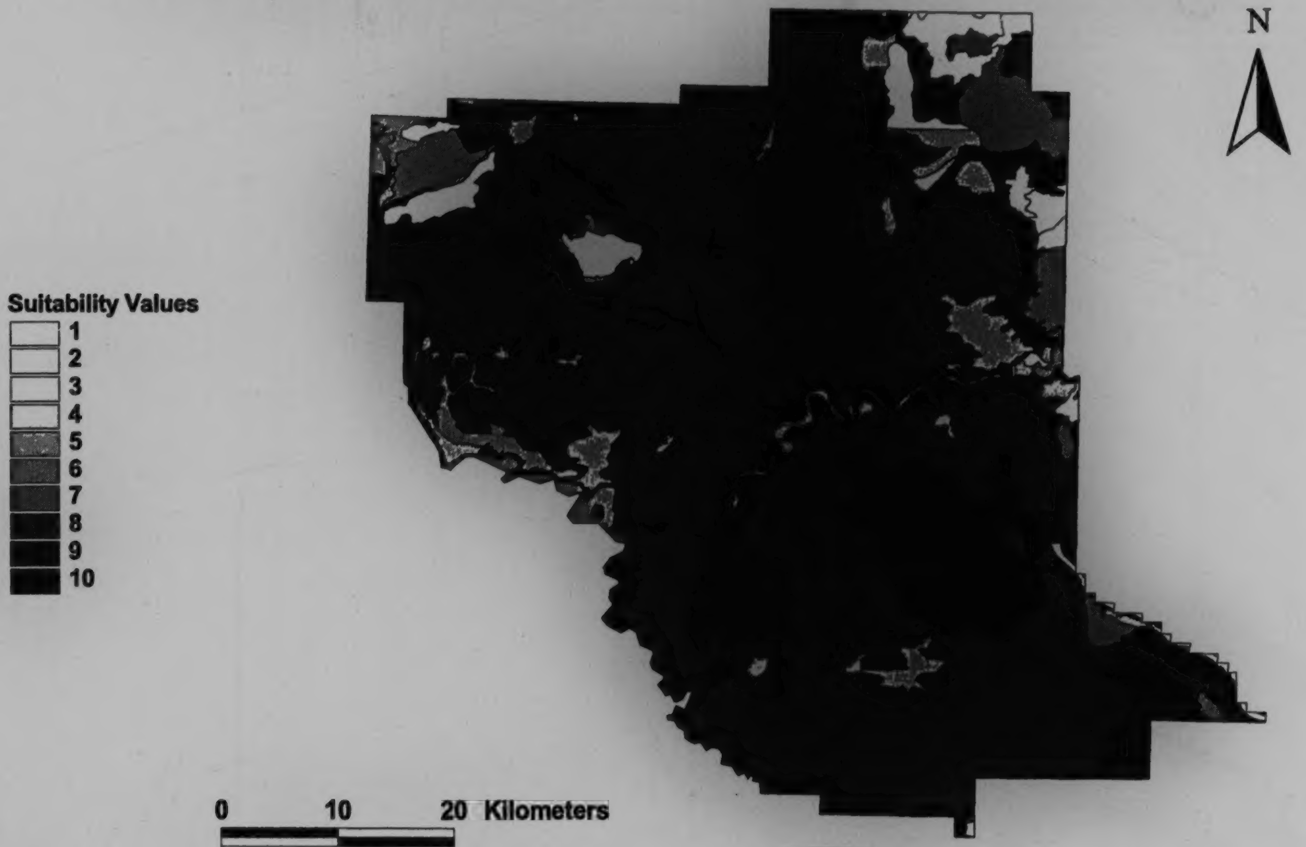

N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20 Kilometers

Figure C-2.13 Landfill Suitability Factor 'Health Risk Impacts'

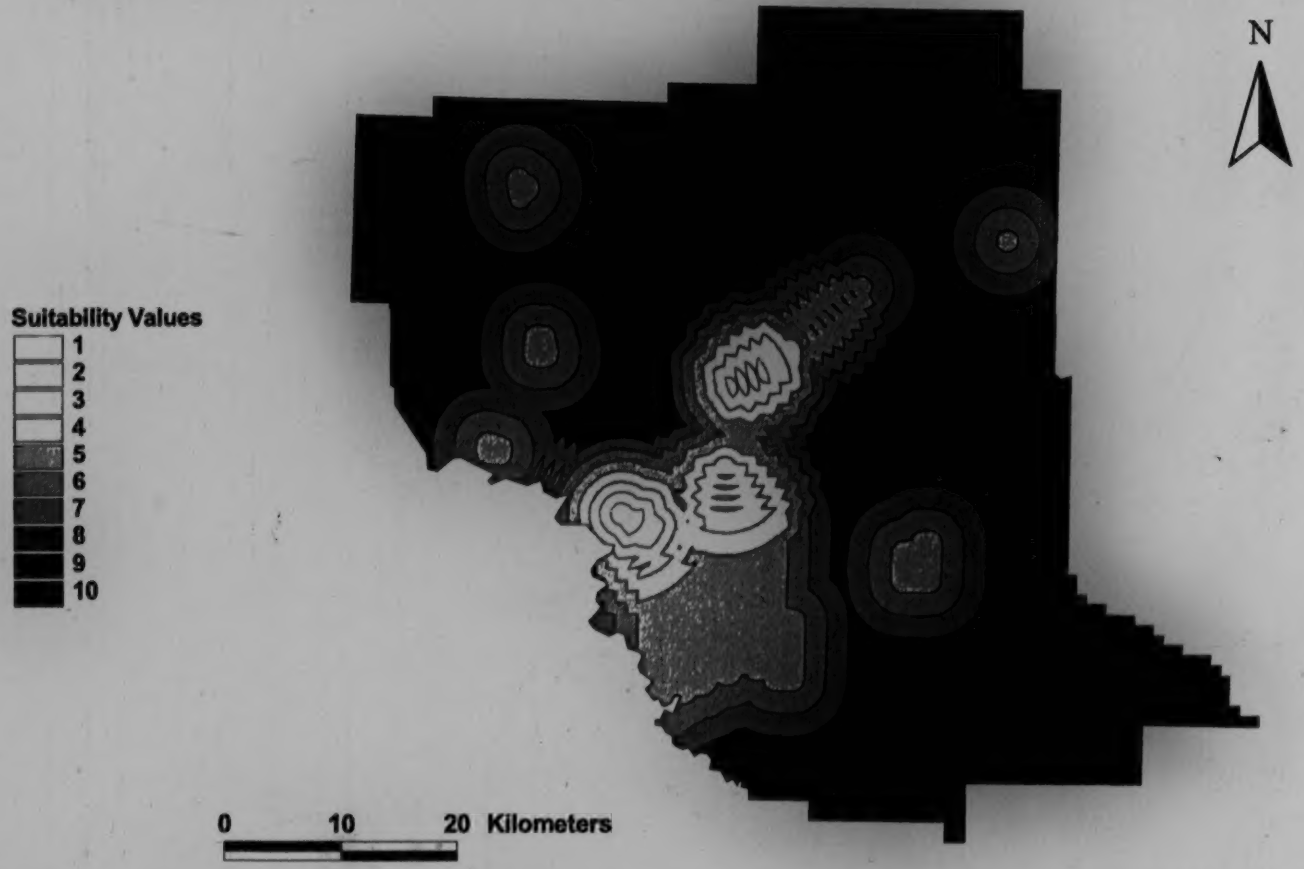

N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20
Kilometers

Figure C-2.14 Landfill Suitability Factor 'Location from a Major Road'

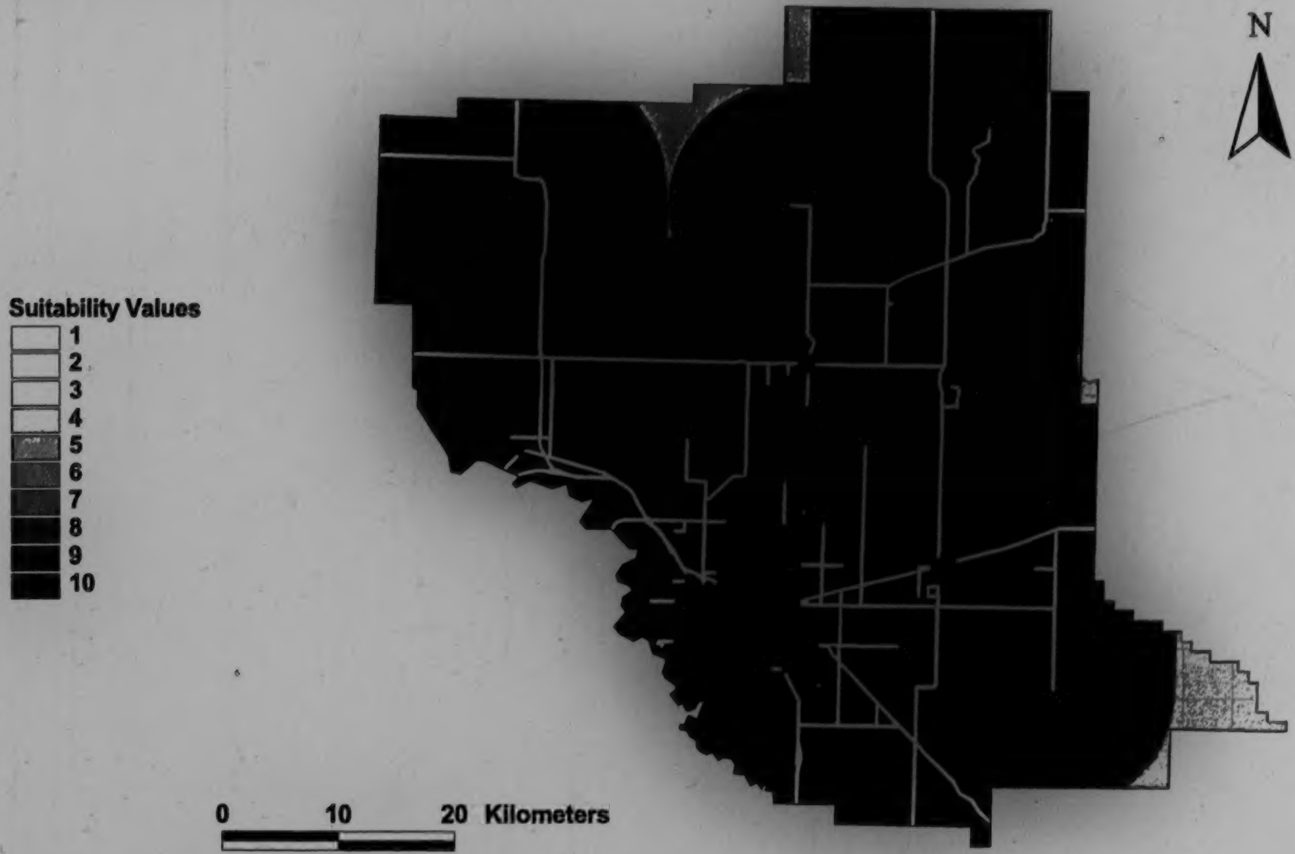

N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20
Kilometers

Figure C-2.15 Landfill Suitability Factor 'Odor as Annoyance'

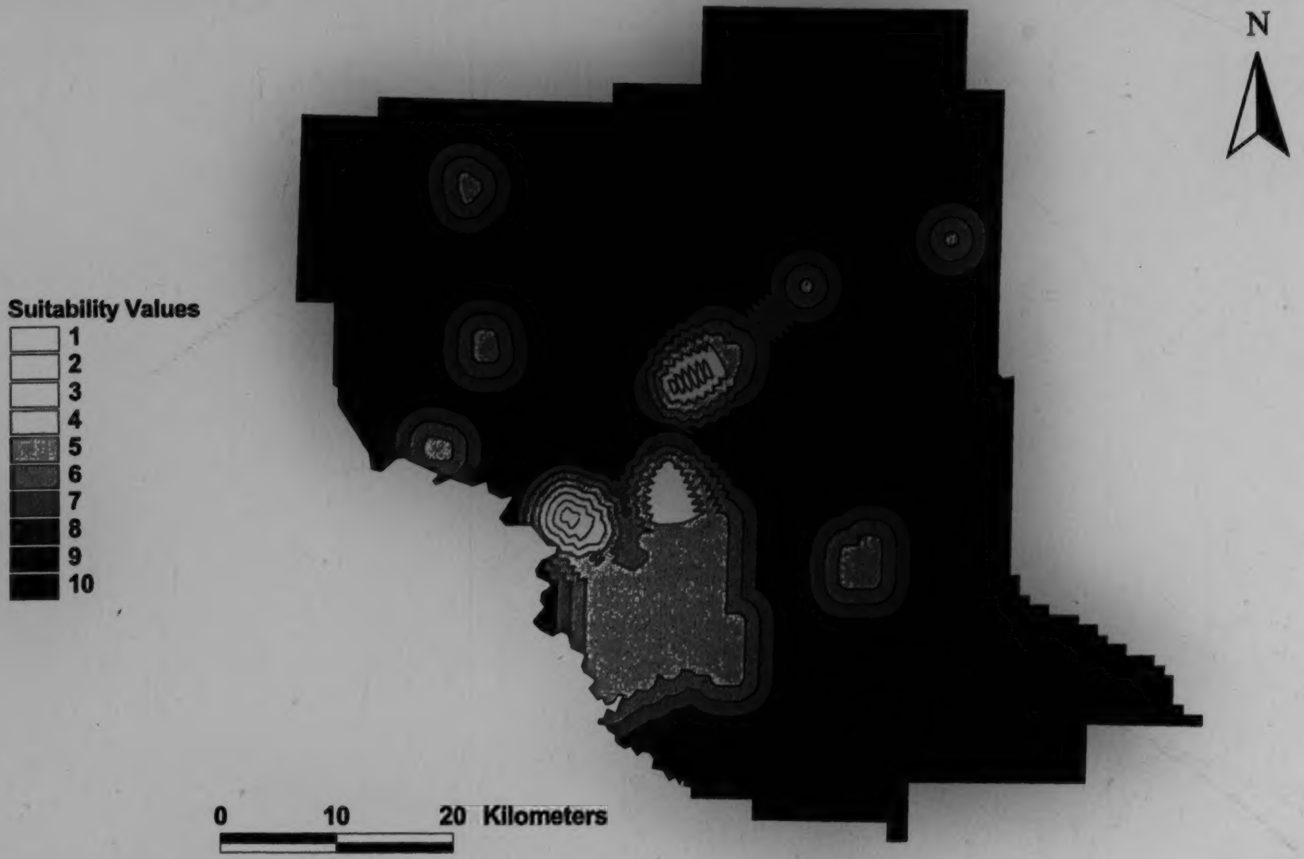
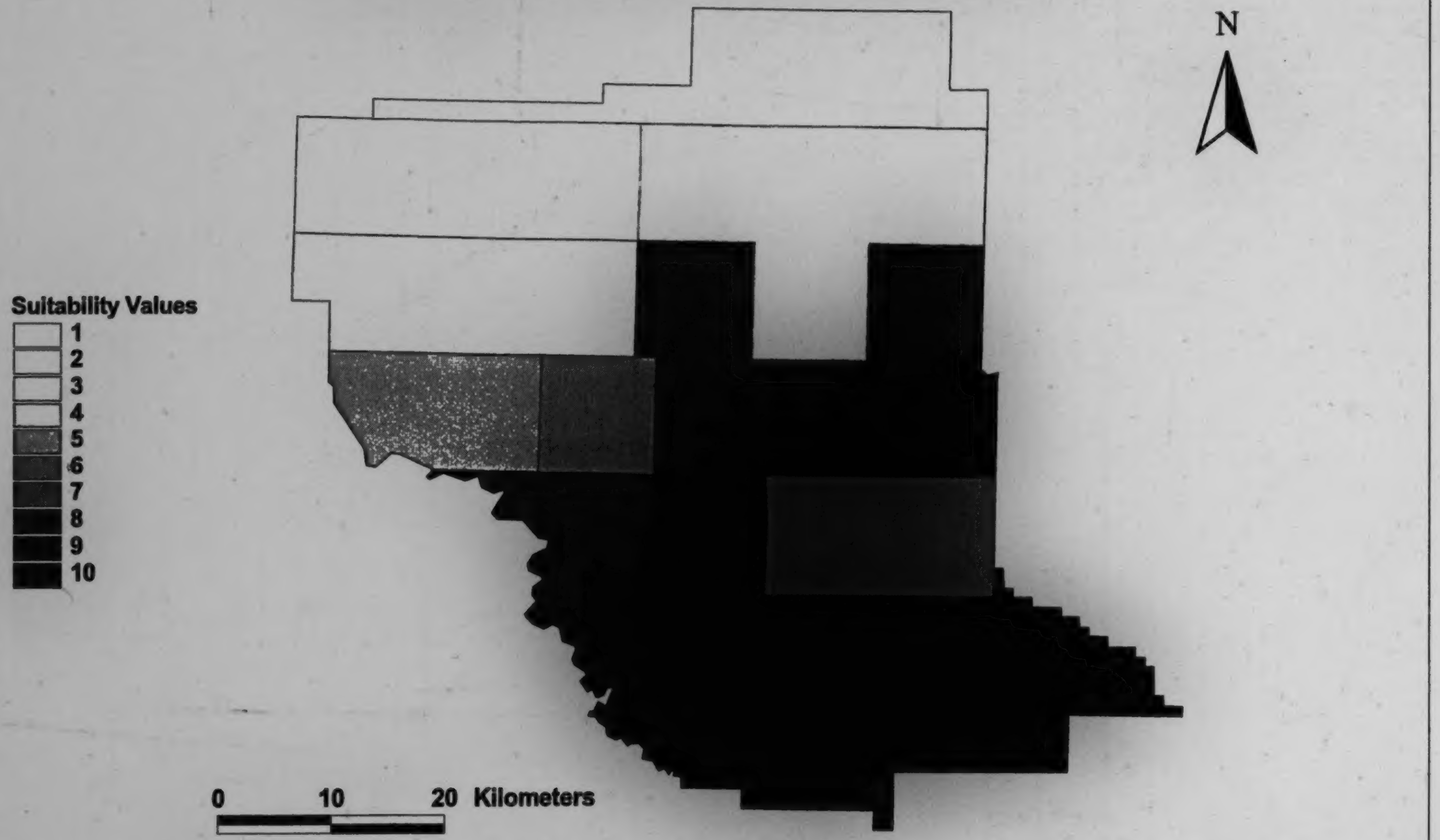

N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20
Kilometers

Figure C-2.16 Landfill Suitability Factor
'Community's Need for the Facility'



N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20 Kilometers

Figure C-2.17 Landfill Suitability Factor 'Distance from the Site Due to Community Opposition'

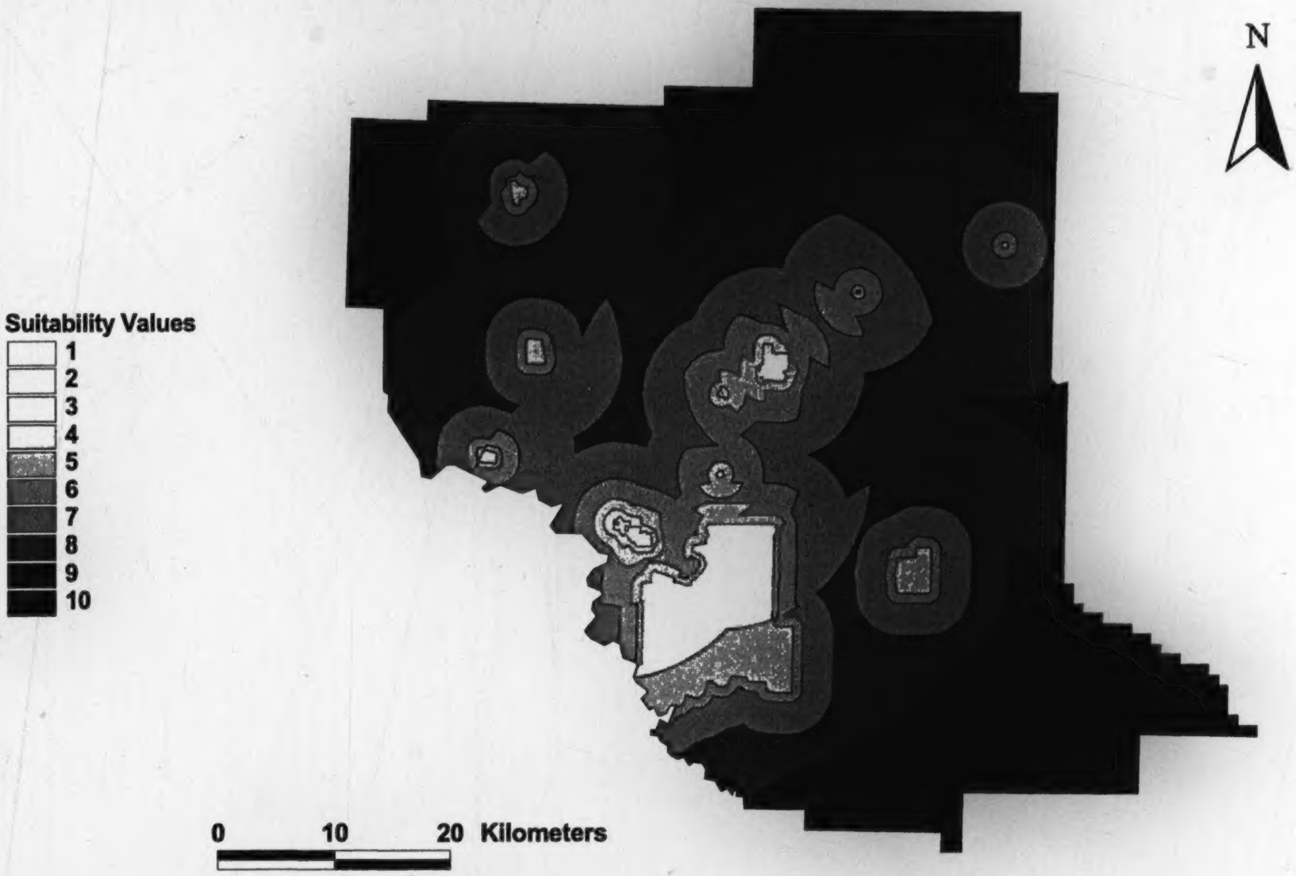

N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20
Kilometers

Figure C-2.18 Landfill Suitability Factor 'Age'

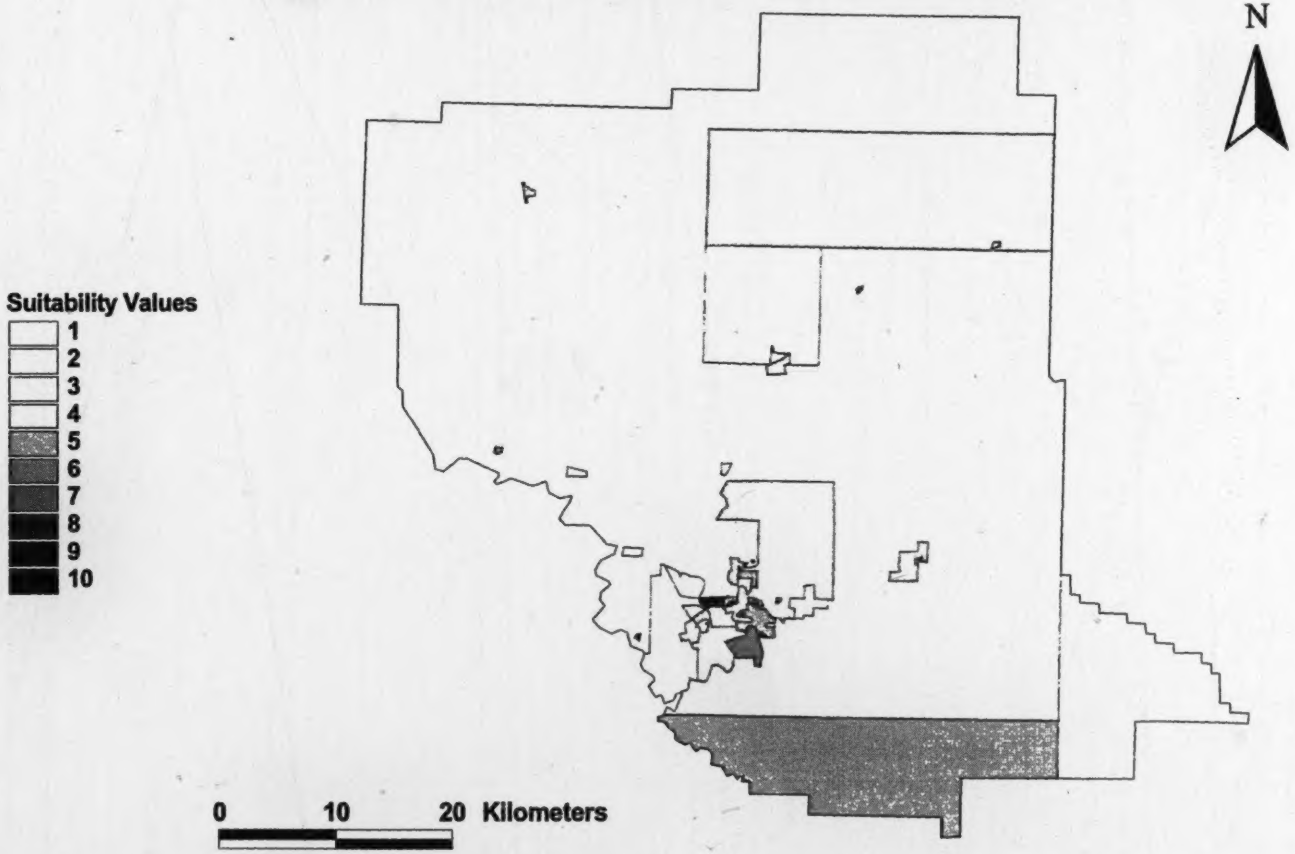

N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20 Kilometers

Figure C-2.19 Landfill Suitability Factor 'Children in the Family'

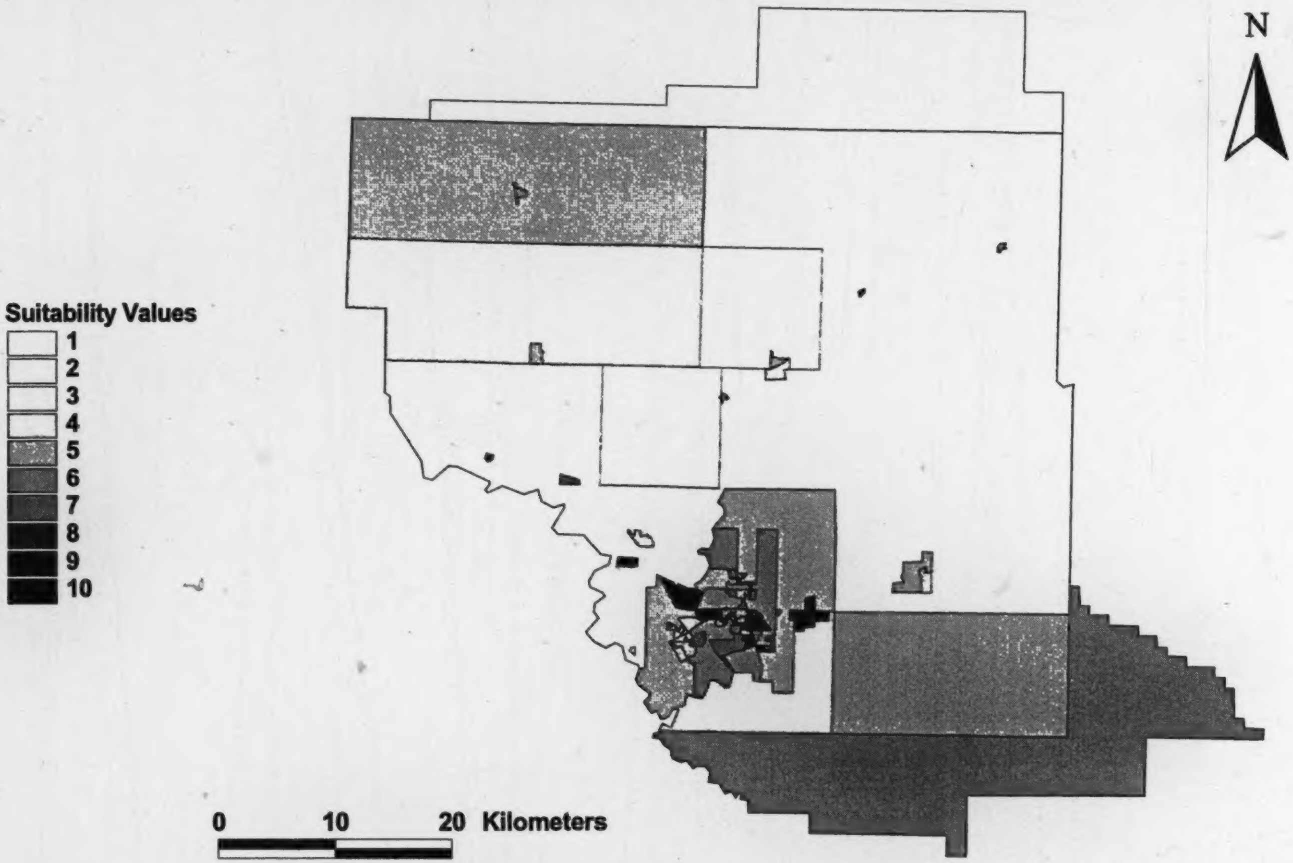

Suitability Values
1
2
3
4
5
6
7
8
9
10
N
0
10
20 Kilometers

Figure C-2.20 Landfill Suitability Factor 'Gradual Economic Loss'

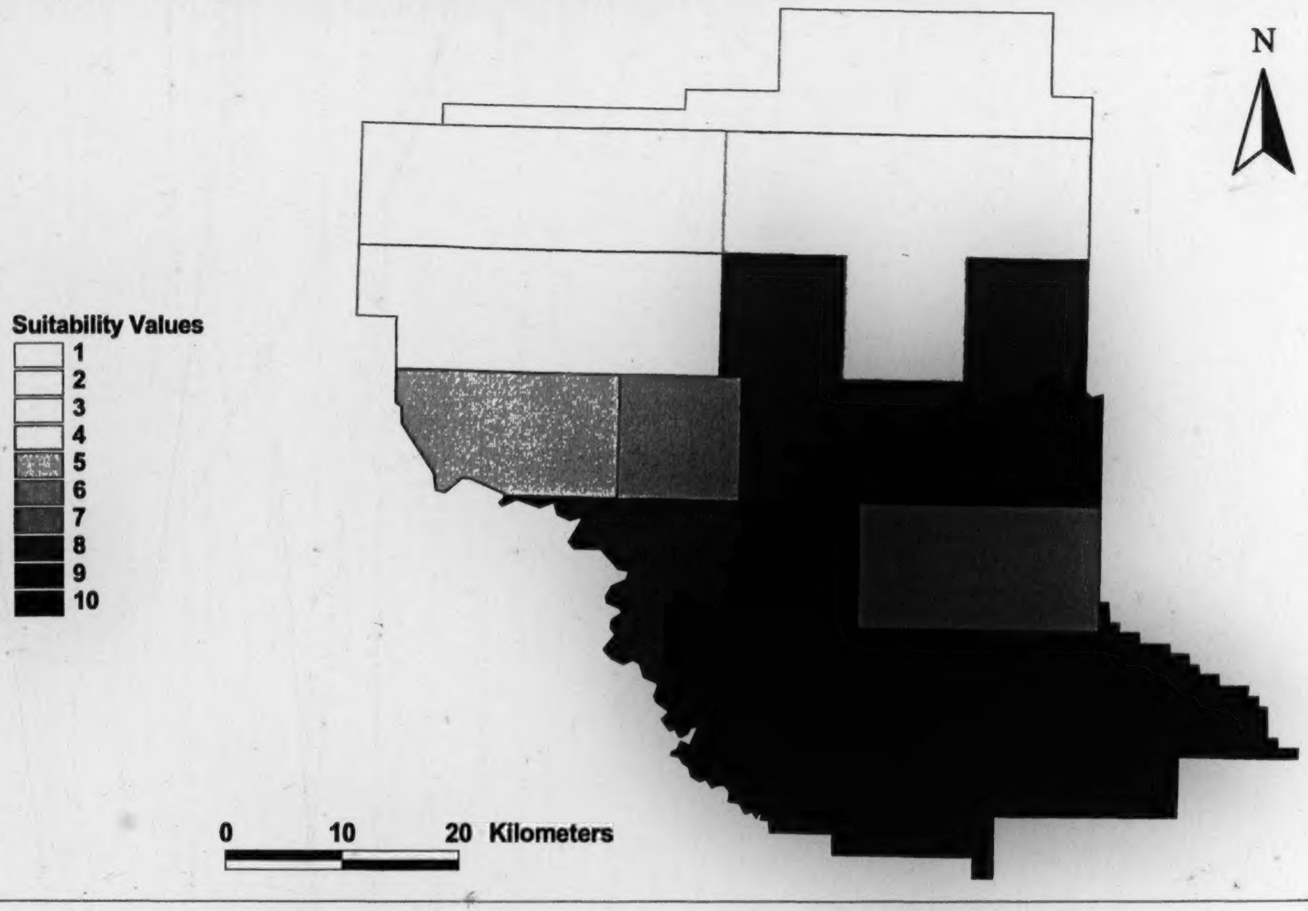

N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20 Kilometers

Figure C-2.21 Landfill Suitability Factor 'Inadequate Public Services'

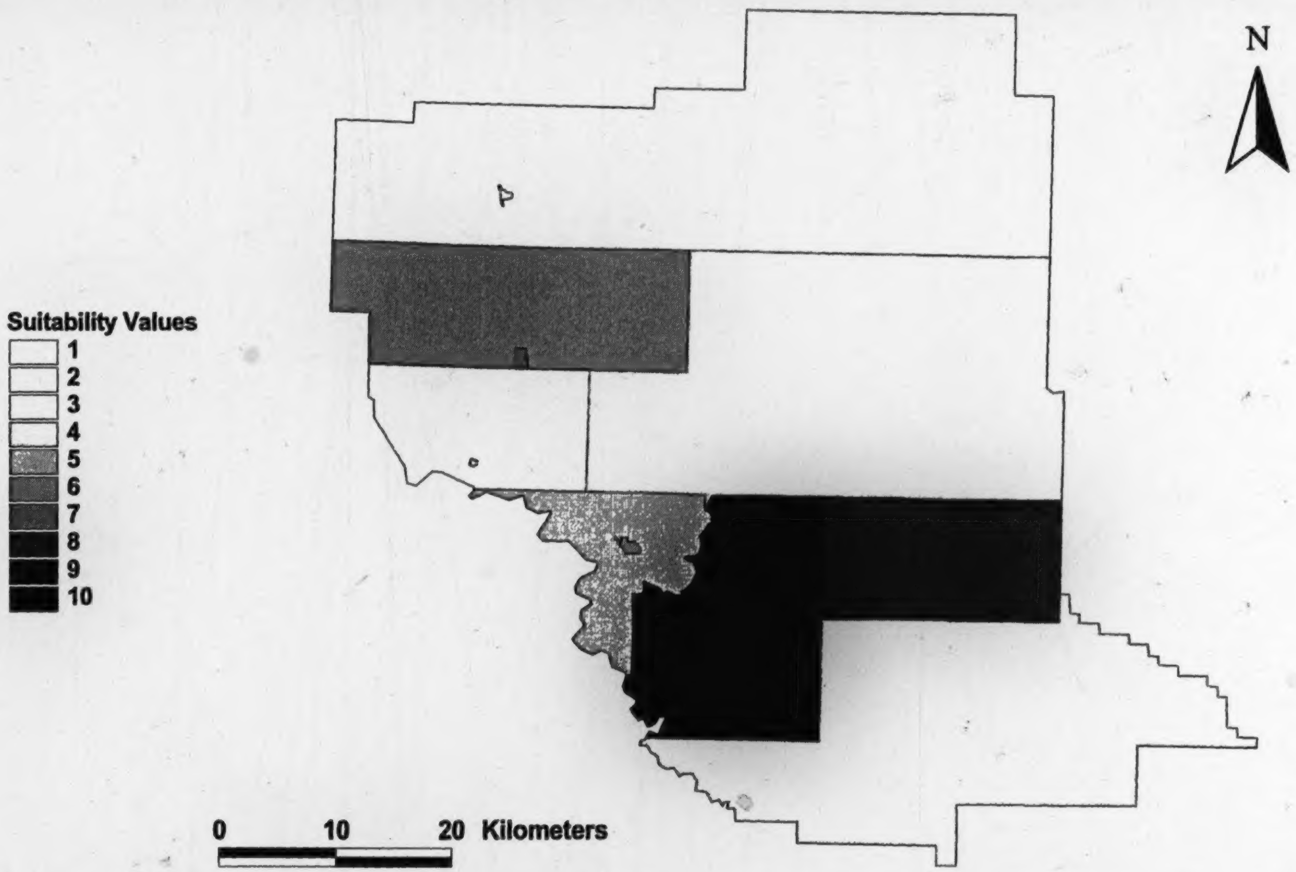

N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20
Kilometers

Figure C-2.22 Landfill Suitability Factor
'Community Division or Rift Due to Social Conflicts'

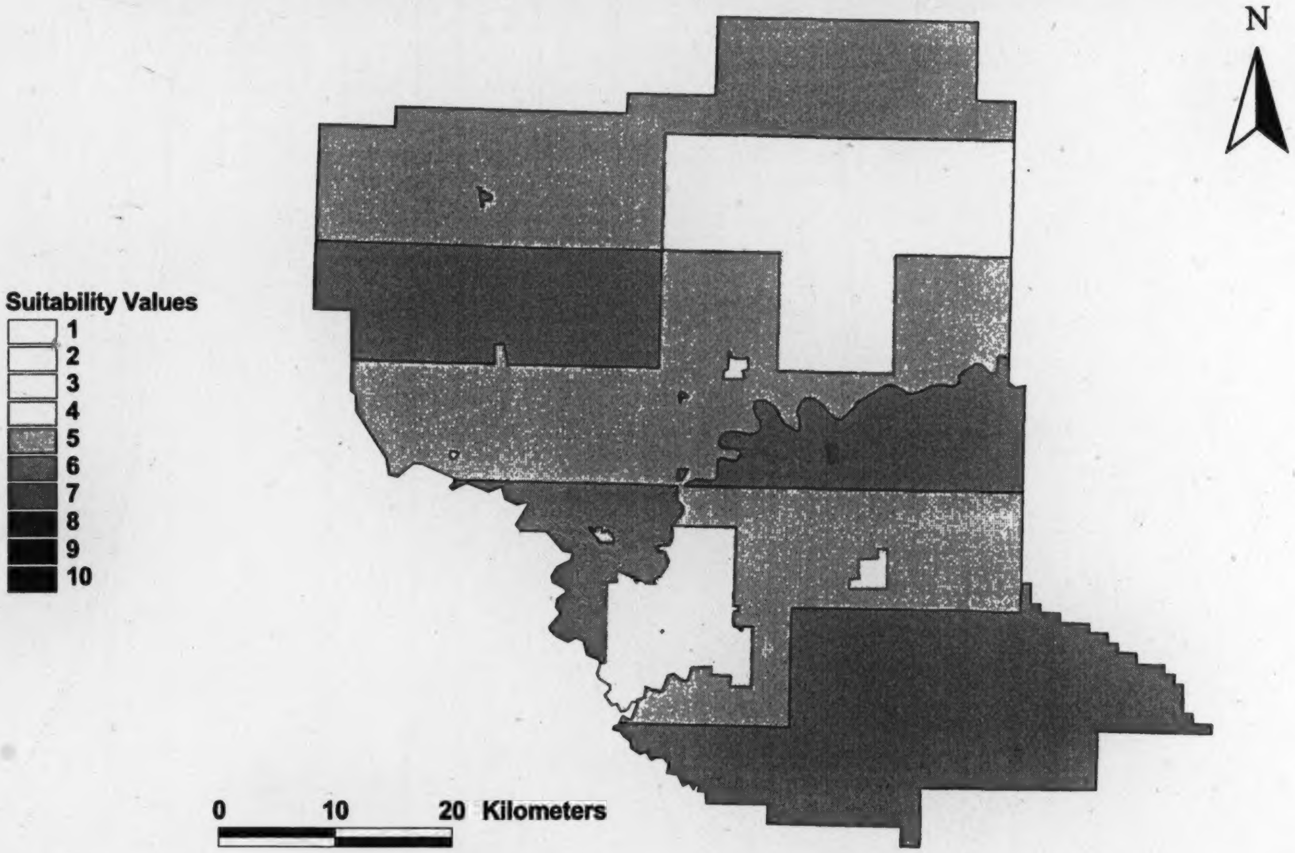

N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20
Kilometers

Figure C-2.23 Landfill Suitability Factor
'History of Environmental Problems'

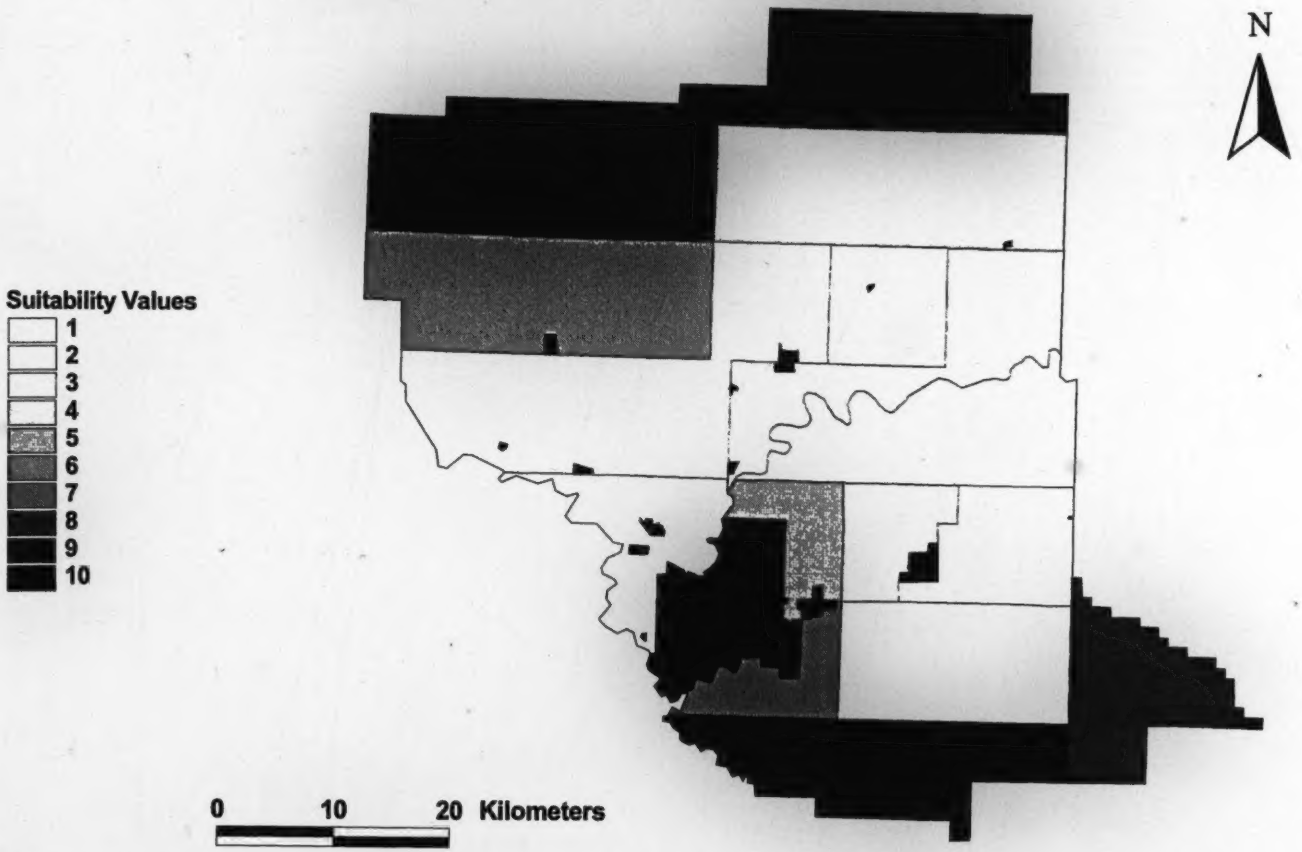

Suitability Values
1
2
3
4
5
6
7
8
9
10
N
0
10
20
Kilometers

Figure C-2.24 Airport Constraint 'Distance from a Landfill' (8 km)

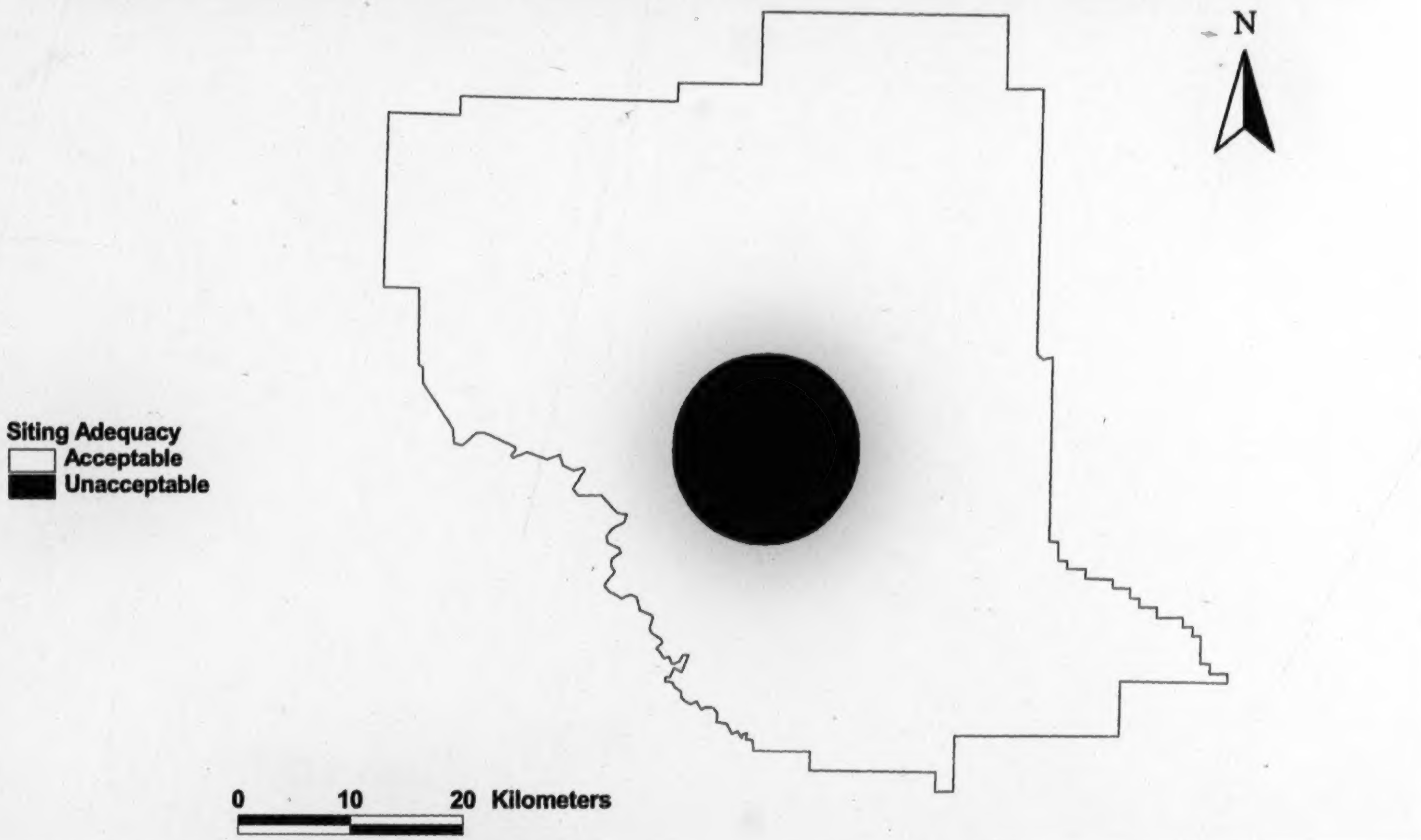

N
Siting Adequacy
Acceptable
Unacceptable
0
10
20
Kilometers

Figure C-2.25 Airport Constraint 'Located Out of Recreational, Cultural, Historic, Archaeological, Aesthetic, Key Wild Life, or High Risk Natural Areas'

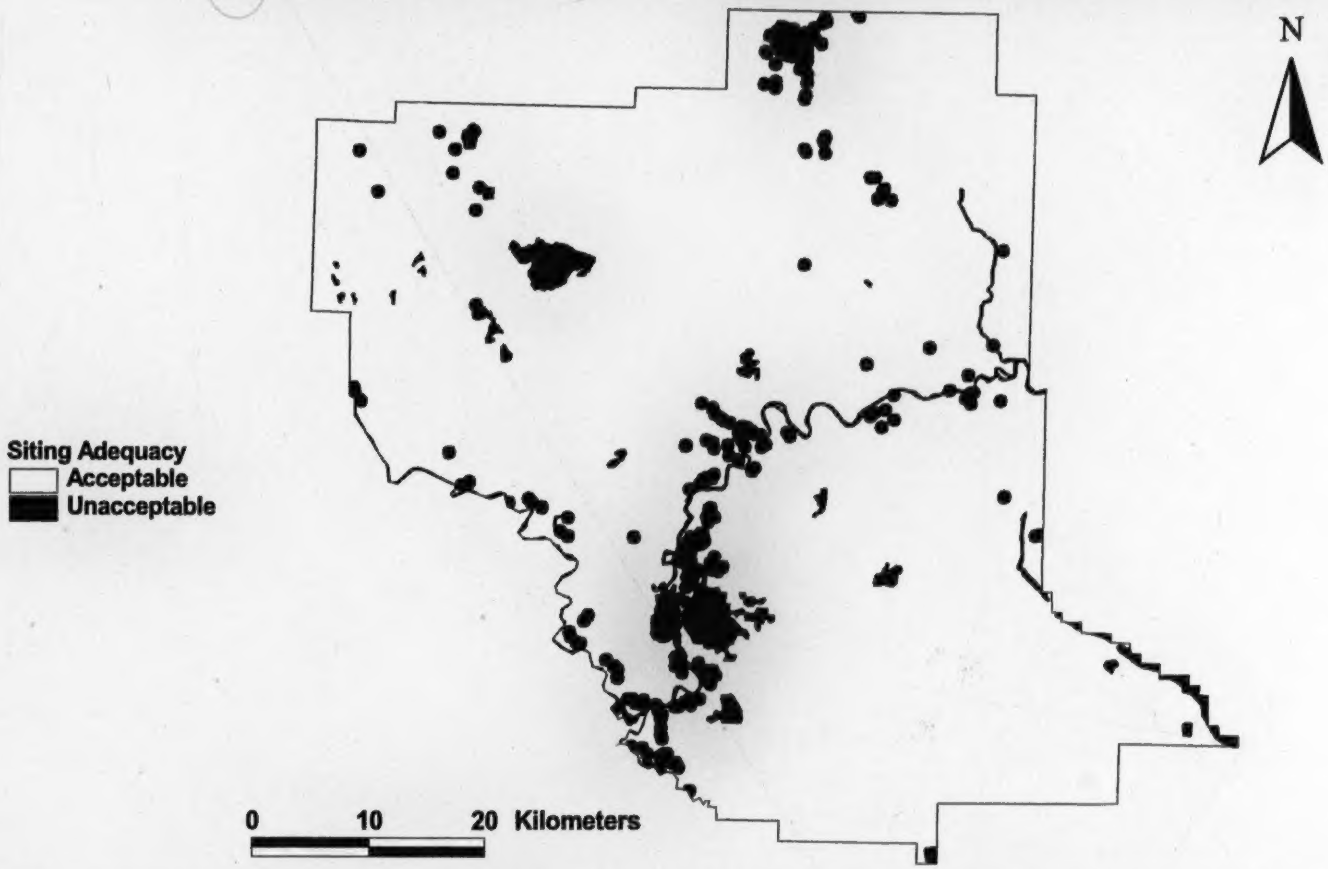

N
Siting Adequacy
Acceptable
Unacceptable
0
10
20 Kilometers

Figure C-2.26 Airport Constraint 'No Structure Should be Built Exceeding the Height of the Weather Radar Antenna' (300 m)

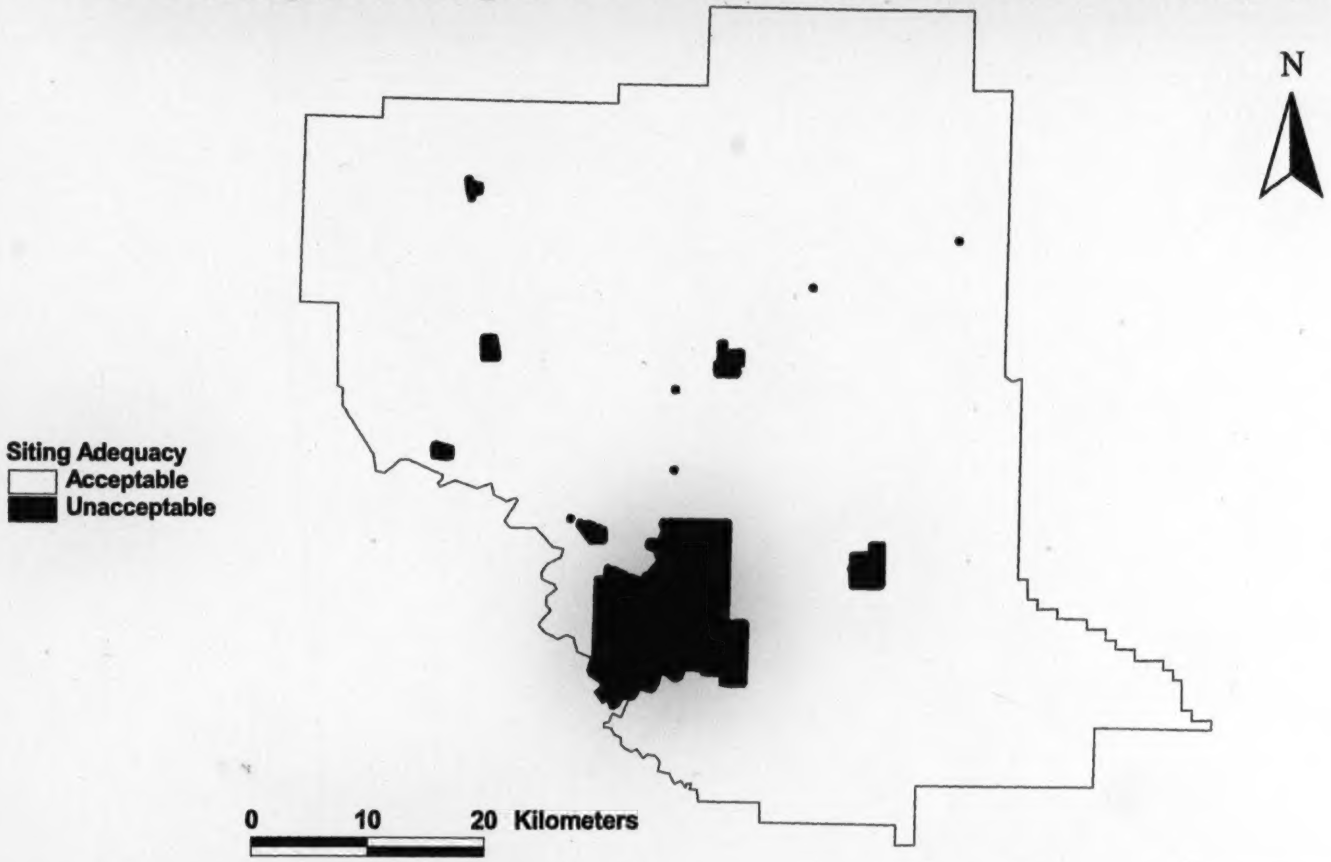

N
Siting Adequacy
Acceptable
Unacceptable
0
10
20 Kilometers

Figure C-2.27 Airport Constraint 'VHF/UHF Transmitters and Receivers Out of Noise Generation Areas' (1.6 km)

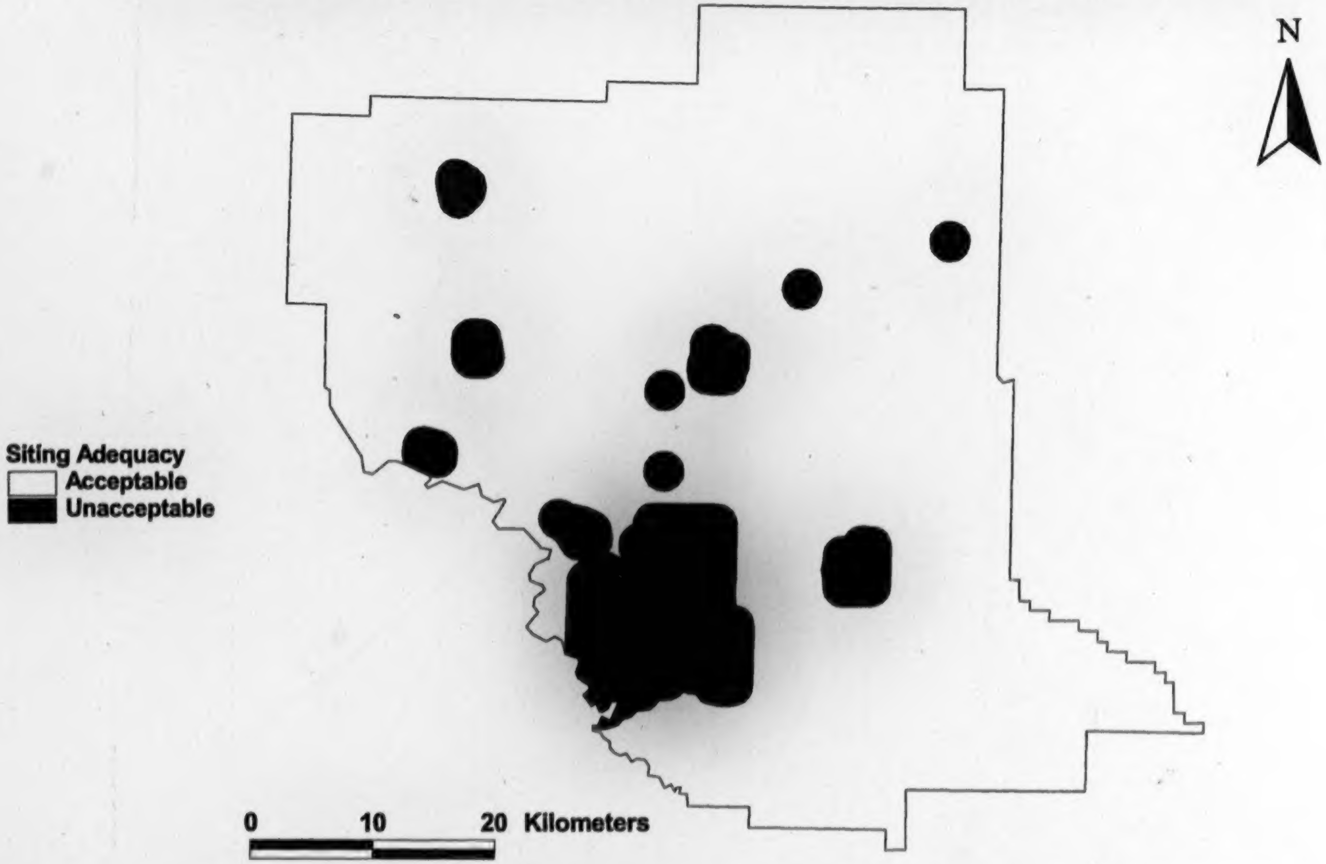

N
Siting Adequacy
Acceptable
Unacceptable
0
10
20 Kilometers

Figure C-2.28 Airport Constraint 'VHF/UHF Receivers and Transmitters Located Out of Areas with Intermodulation Problems' (8 km)

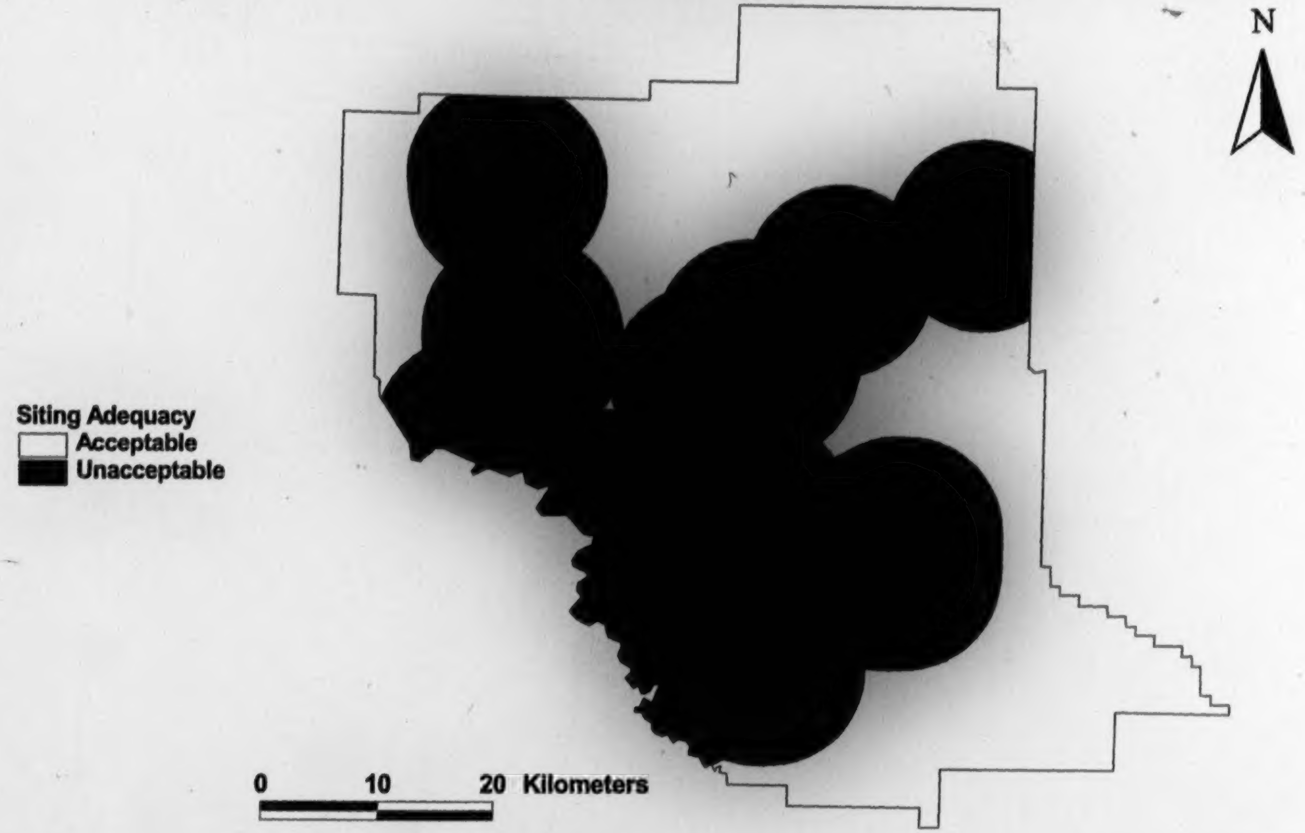

N
Siting Adequacy
Acceptable
Unacceptable
0
10
20 Kilometers

Figure C-2.29 Airport Constraint 'Restrictions to Visibility by Industrial Operations or Manufacturing Processes' (8 km)

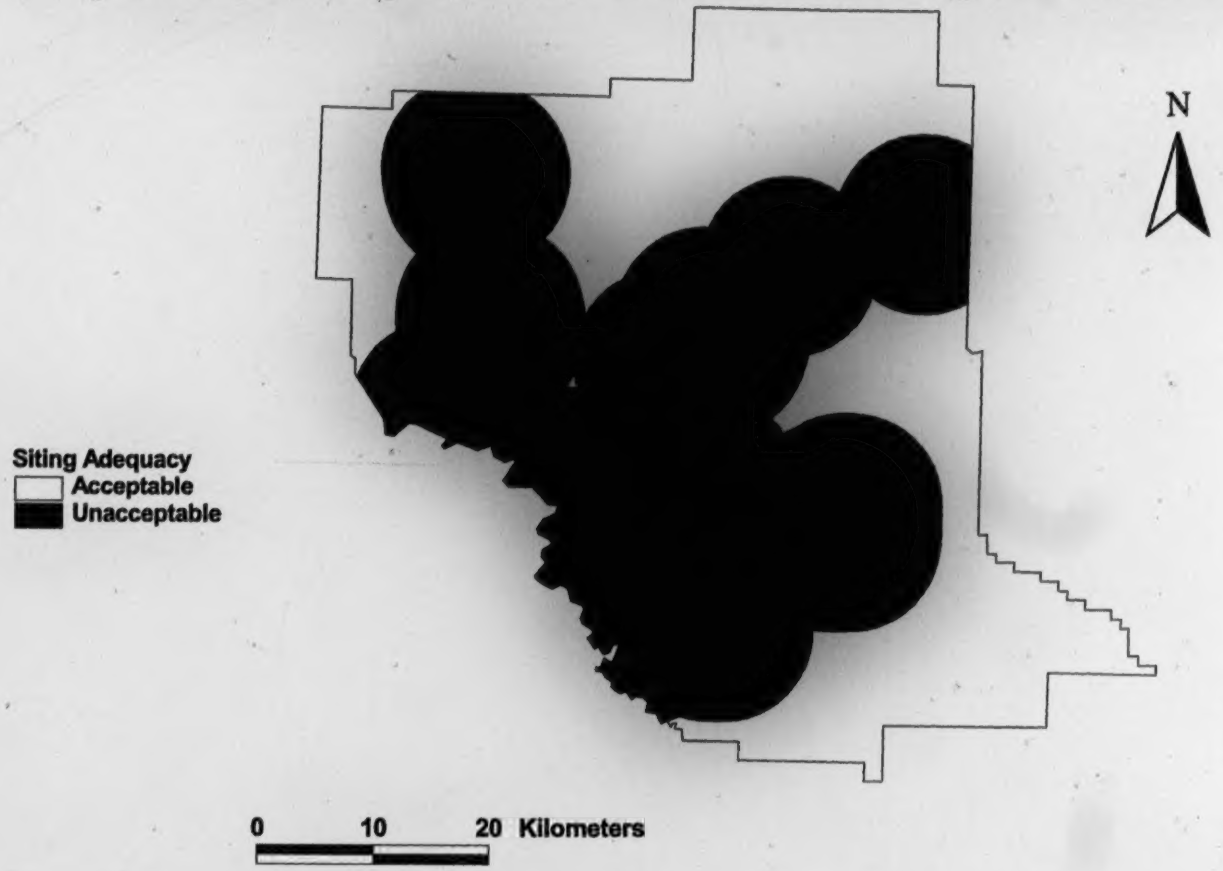

N
Siting Adequacy
Acceptable
Unacceptable
0
10
20
Kilometers

Figure C-2.30 Airport Constraint 'Air Quality Impacts' (6 km)

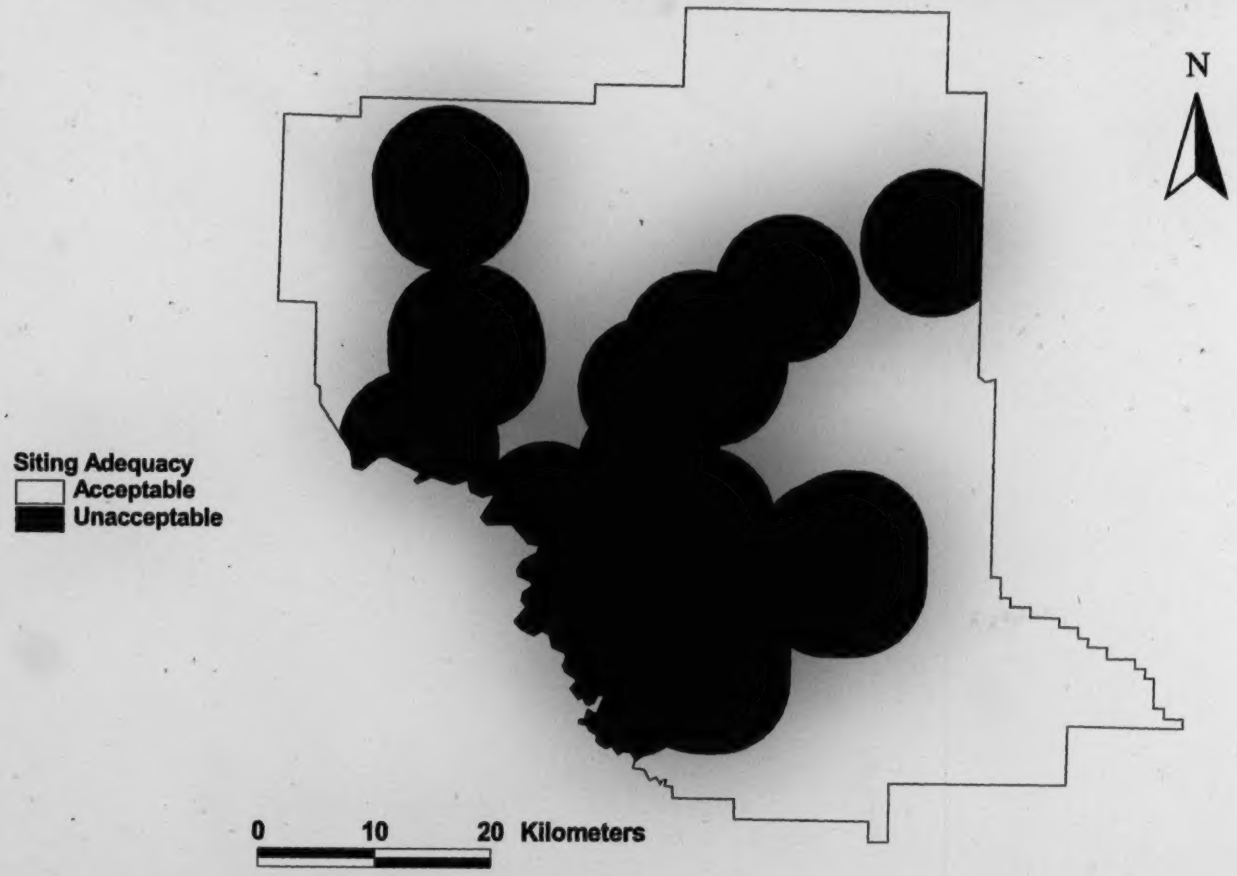

N
Siting Adequacy
Acceptable
Unacceptable
0
10
20
Kilometers

Figure C-2.31 Airport Suitability Factor 'Noise'

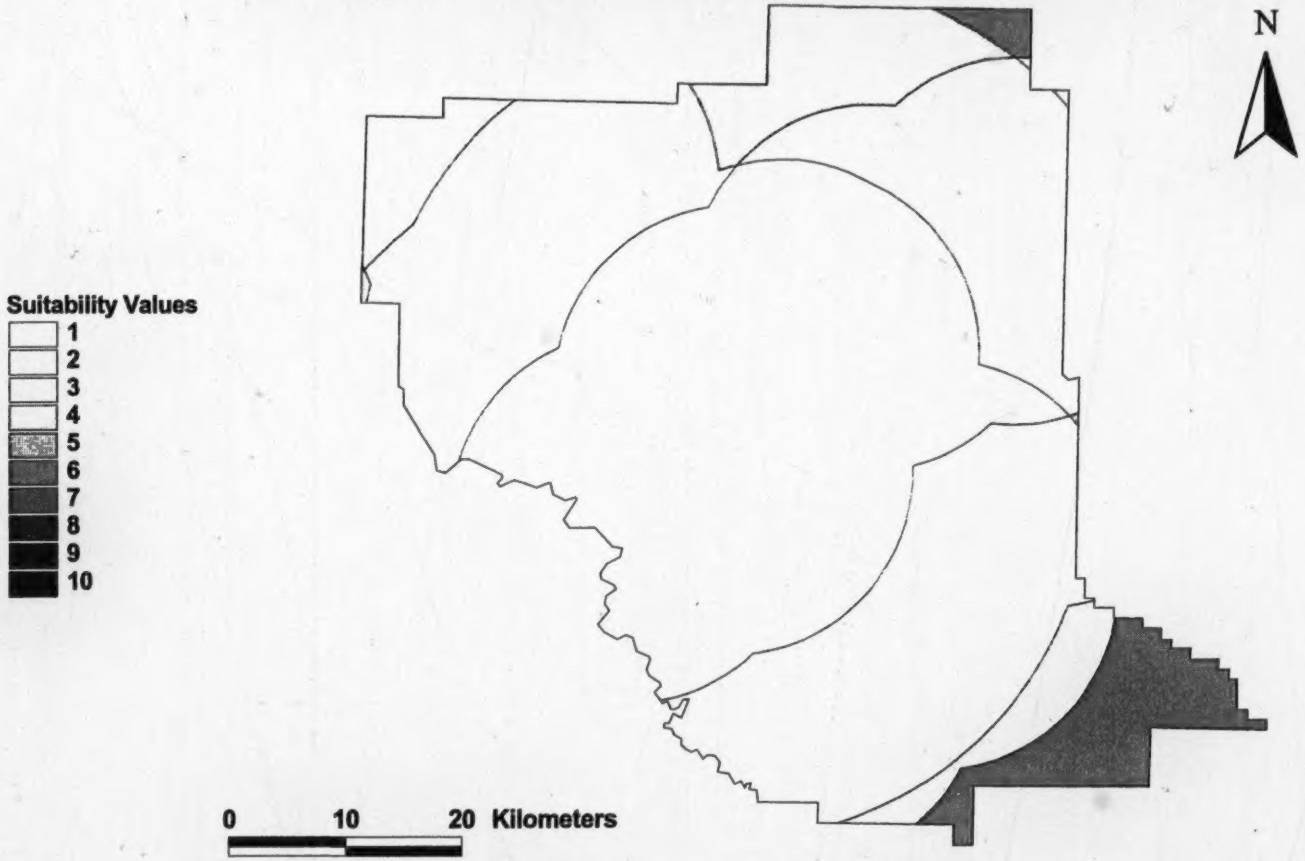

N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20 Kilometers

Figure C-2.32 Airport Suitability Factor 'Noise as Annoyance'

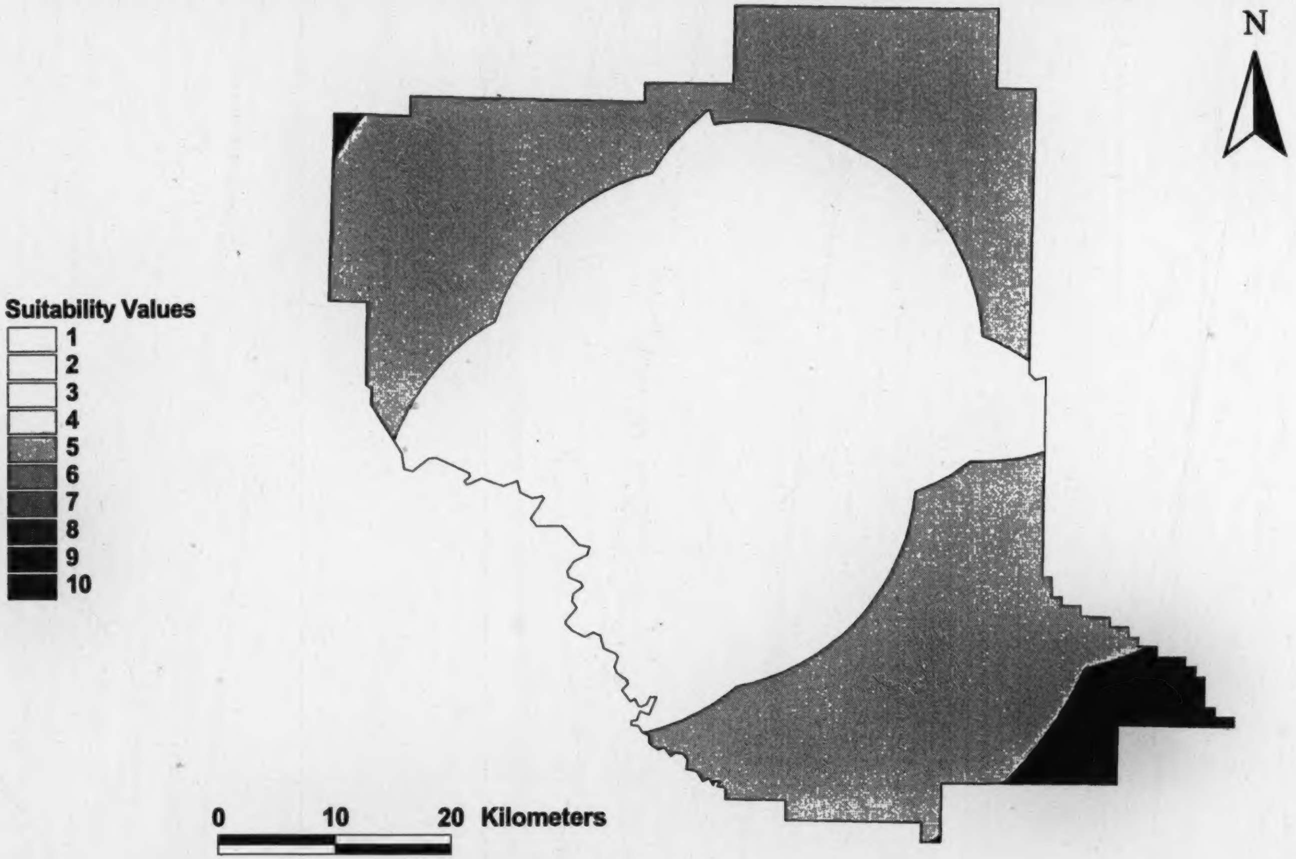

N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20
Kilometers

Figure C-2.33 Airport Suitability Factor 'Traffic Congestion'

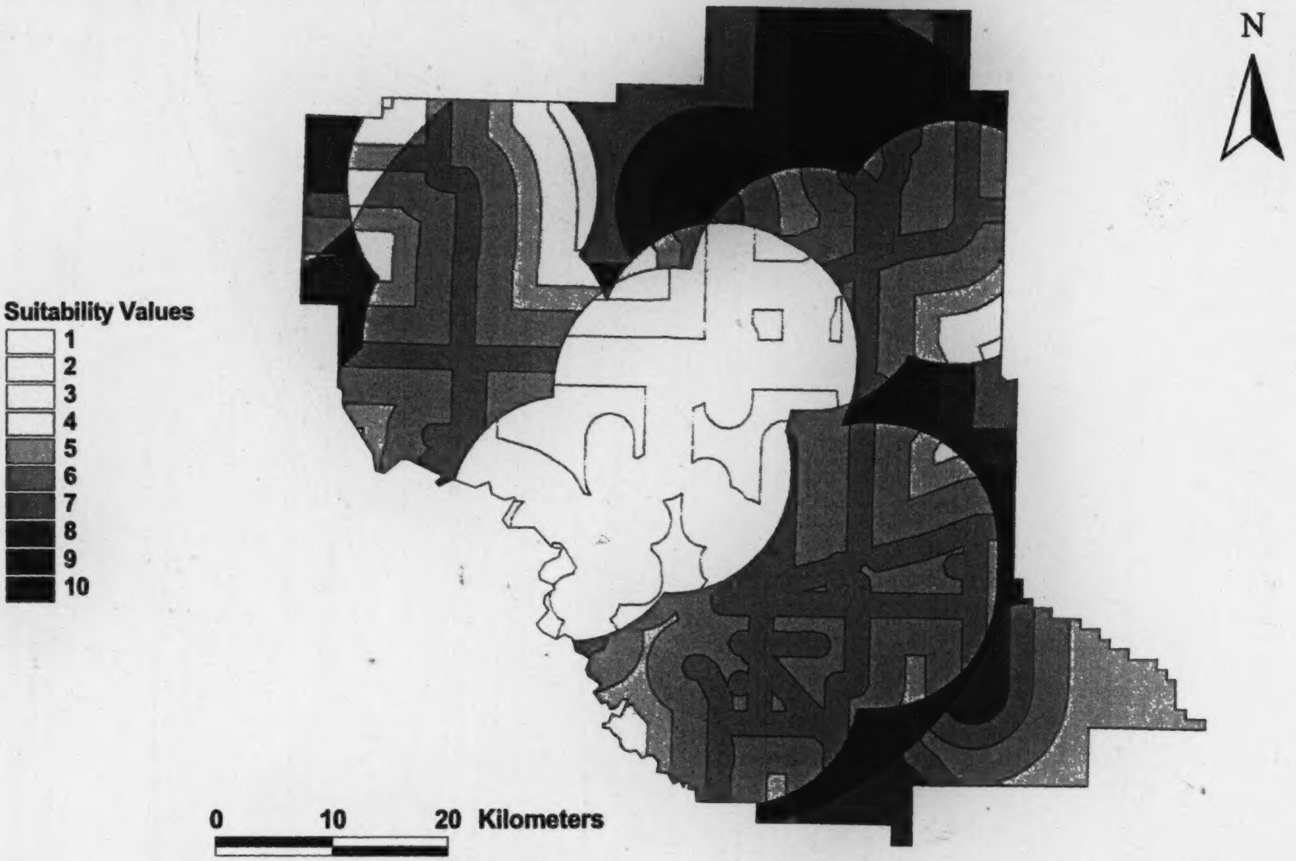

N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20
Kilometers

Figure C-2.34 Airport Suitability Factor 'Gradual Economic Loss'

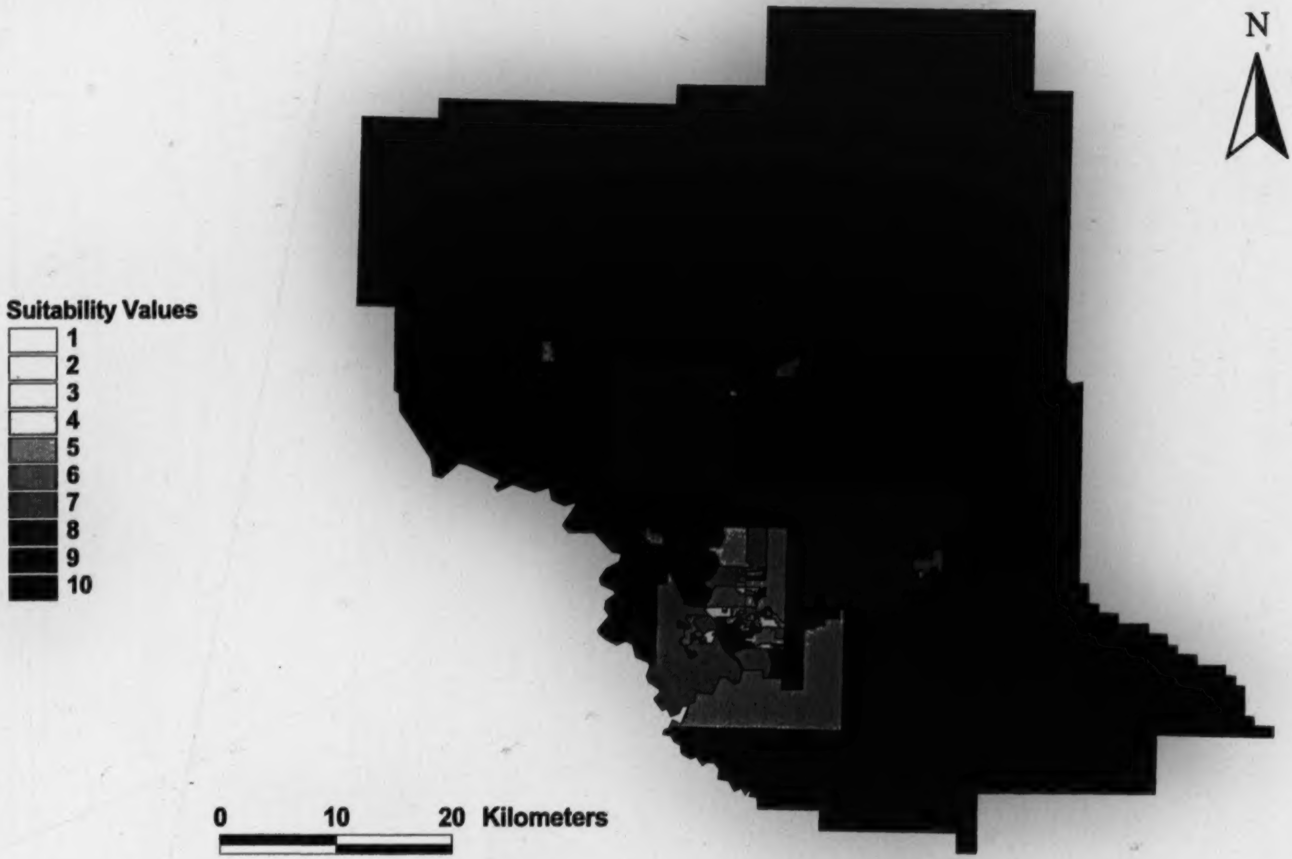

N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20
Kilometers

Figure C-2.35 Airport Suitability Factor 'Inadequate Public Services'

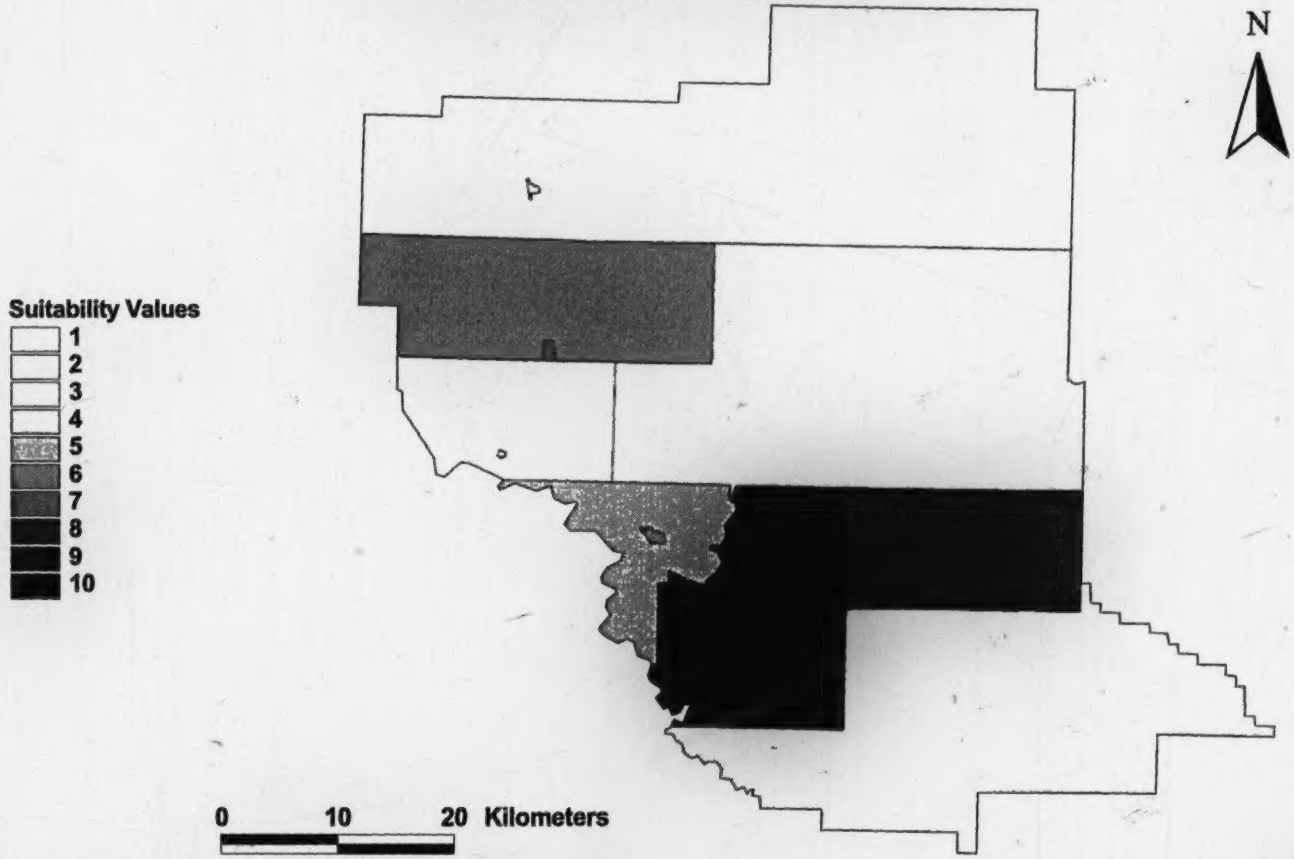
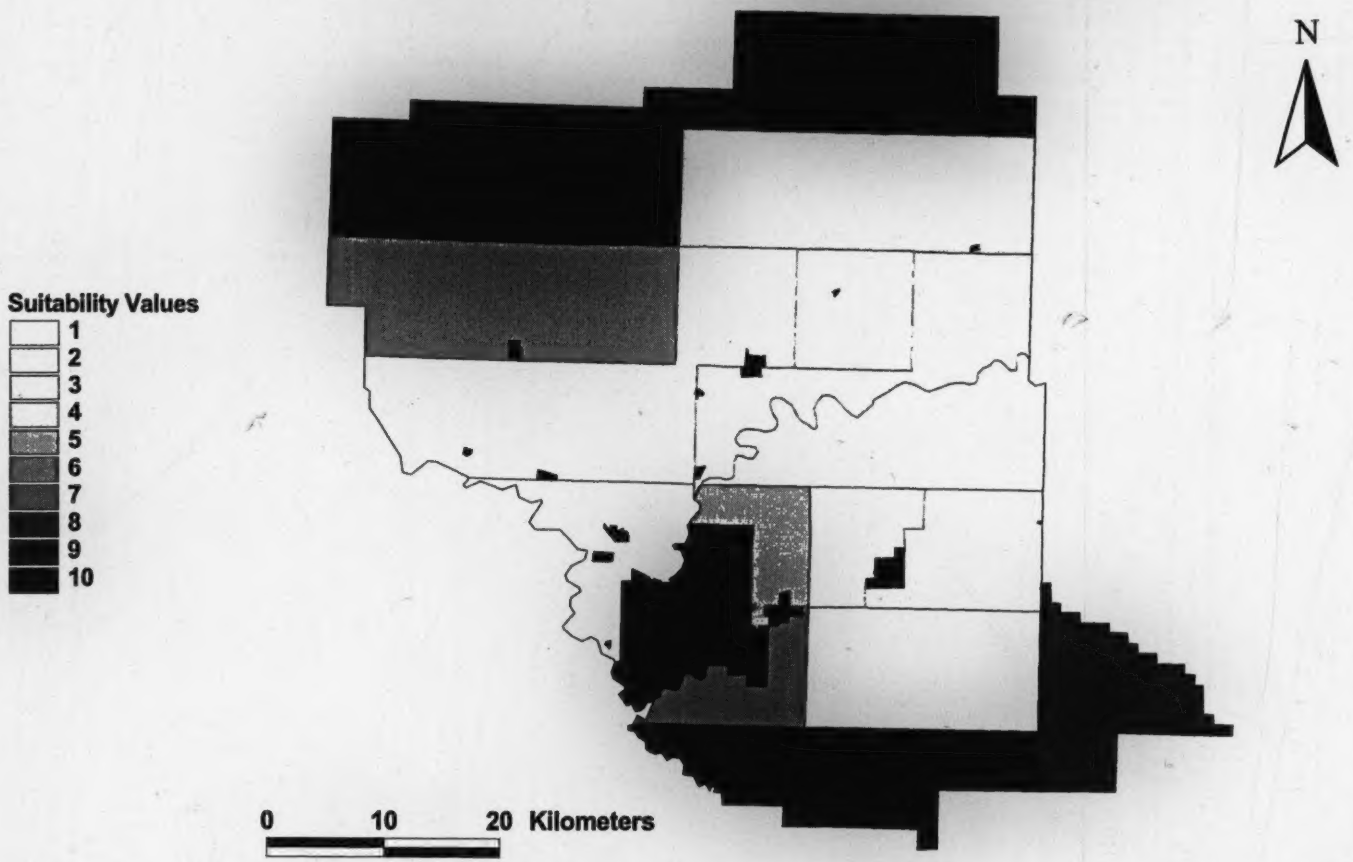

N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20
Kilometers

Figure C-2.36 Airport Suitability Factor
'History of Environmental Problems'


N
Suitability Values
1
2
3
4
5
6
7
8
9
10
0
10
20
Kilometers

APPENDIX D

Figure D-1 Scenario No. 1 Landfill Siting Exclusionary Criteria

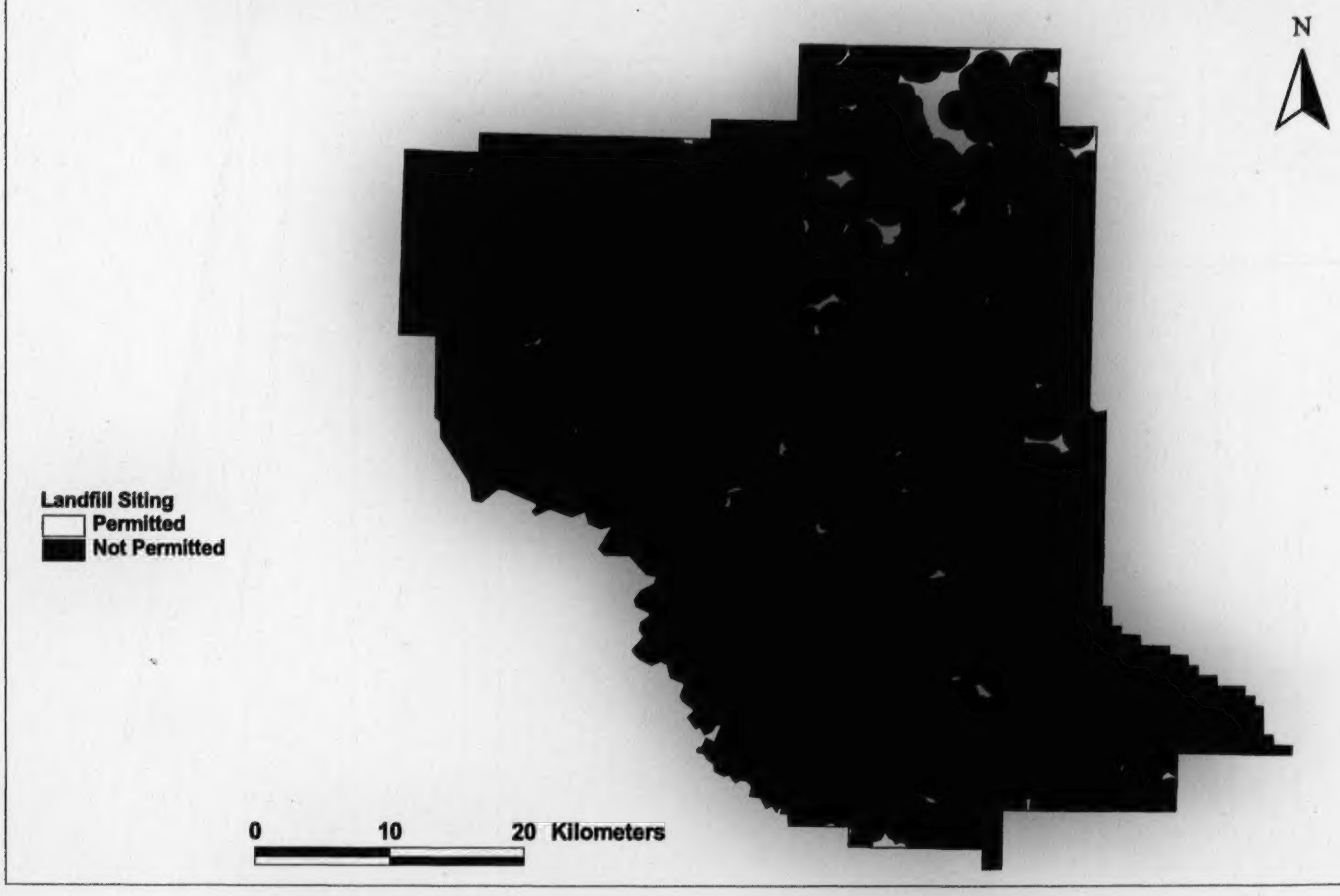

N
Landfill Siting
Permitted
Not Permitted
0
10
20 Kilometers

Figure D-2 Scenario No. 1 Landfill Siting No Exclusionary Criteria

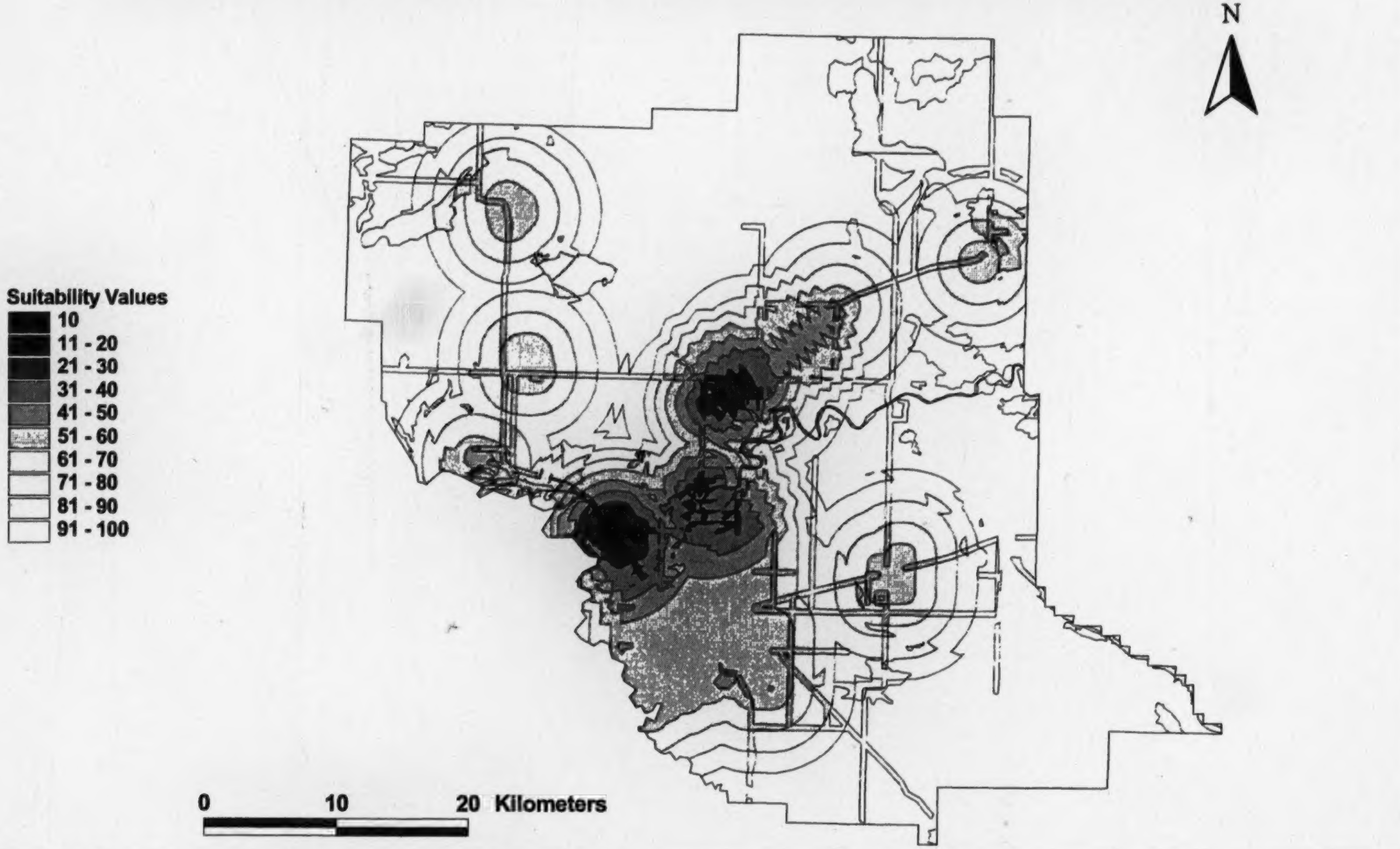

N
Suitability Values
10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure D-3 Scenario No. 1 Landfill Siting Community Criteria

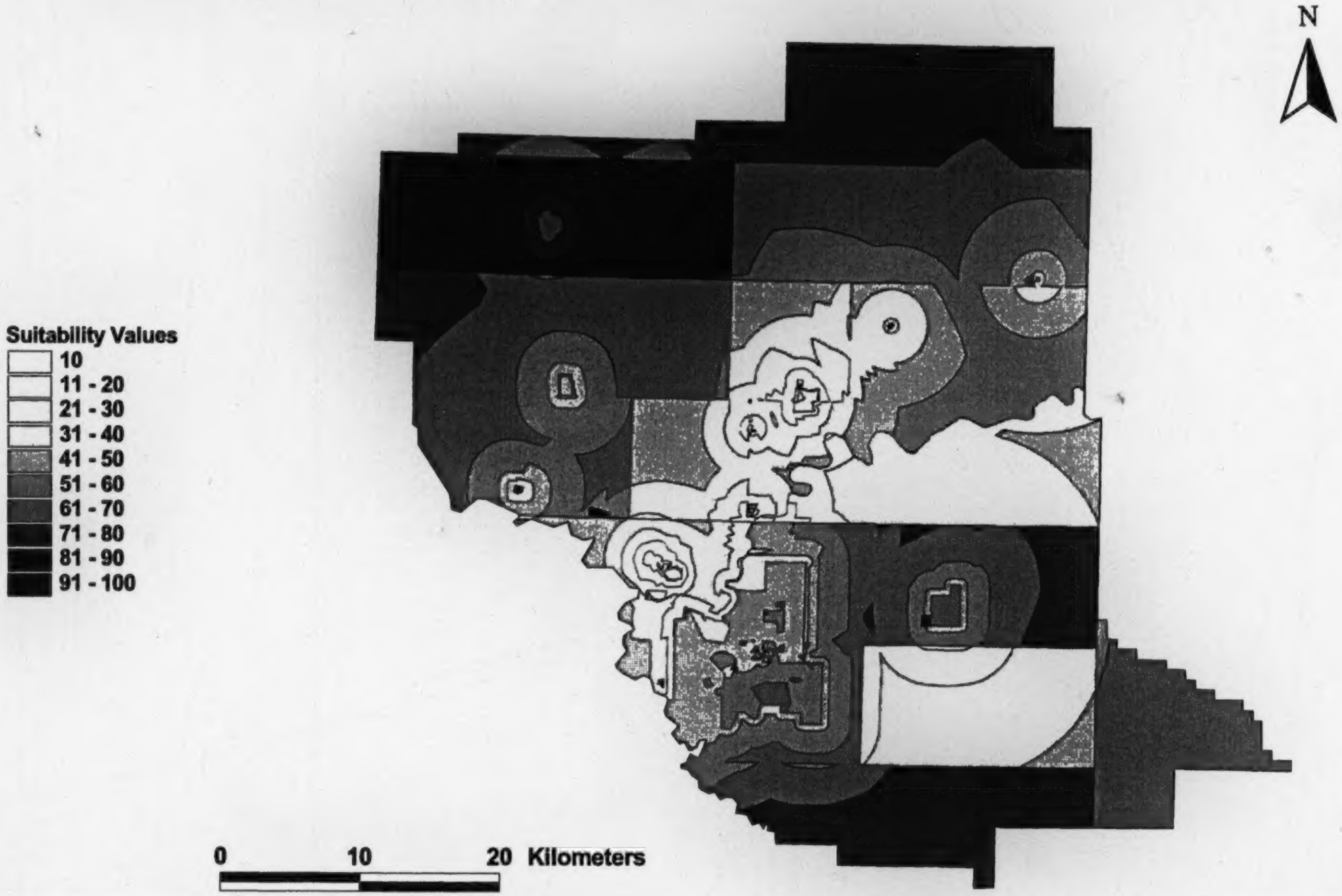

N
Suitability Values
10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure D-4 Scenario No. 1 Final Landfill Siting

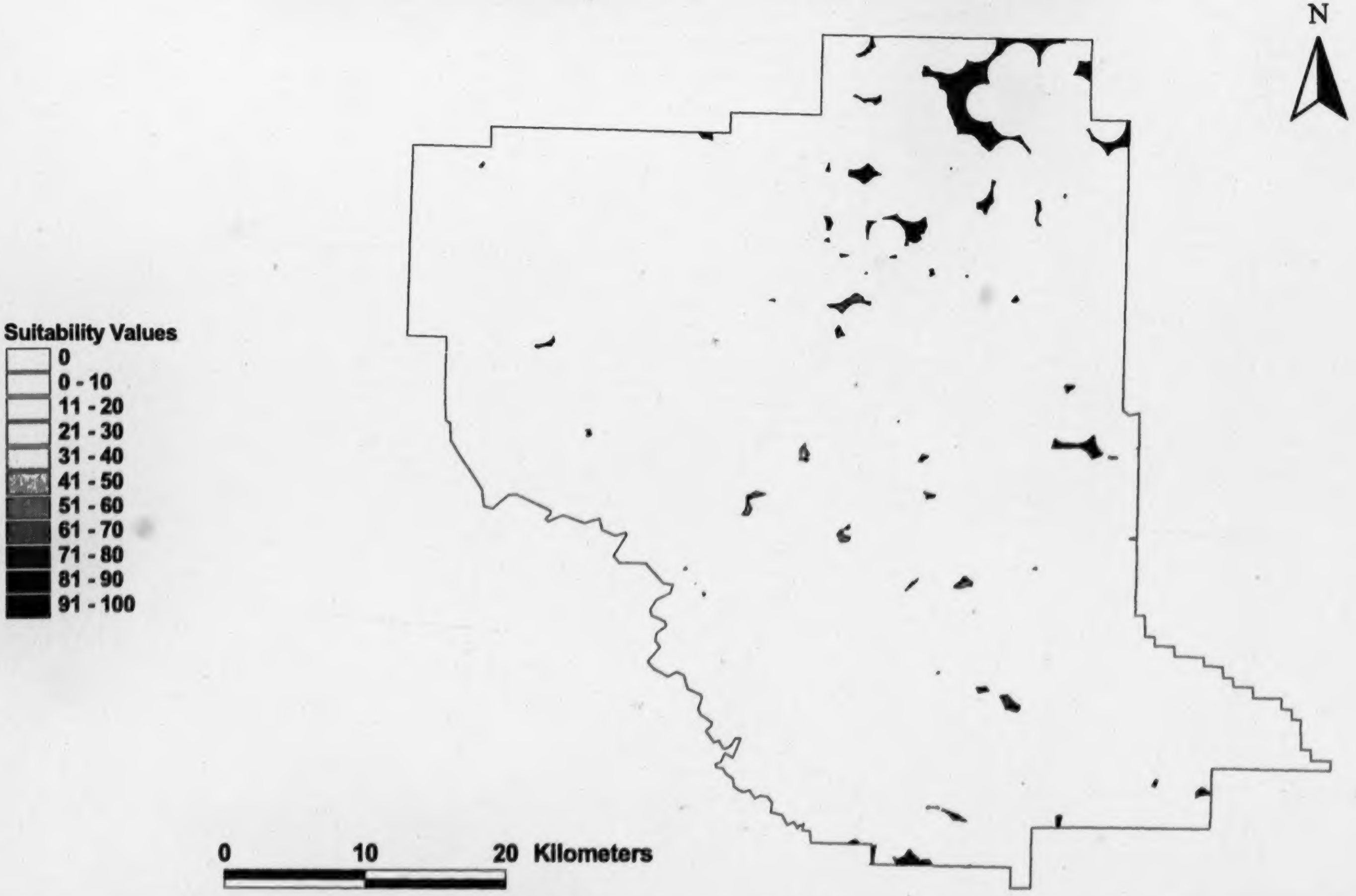

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure D-5 Scenario No. 1 Final Landfill Siting without Considering Community Criteria

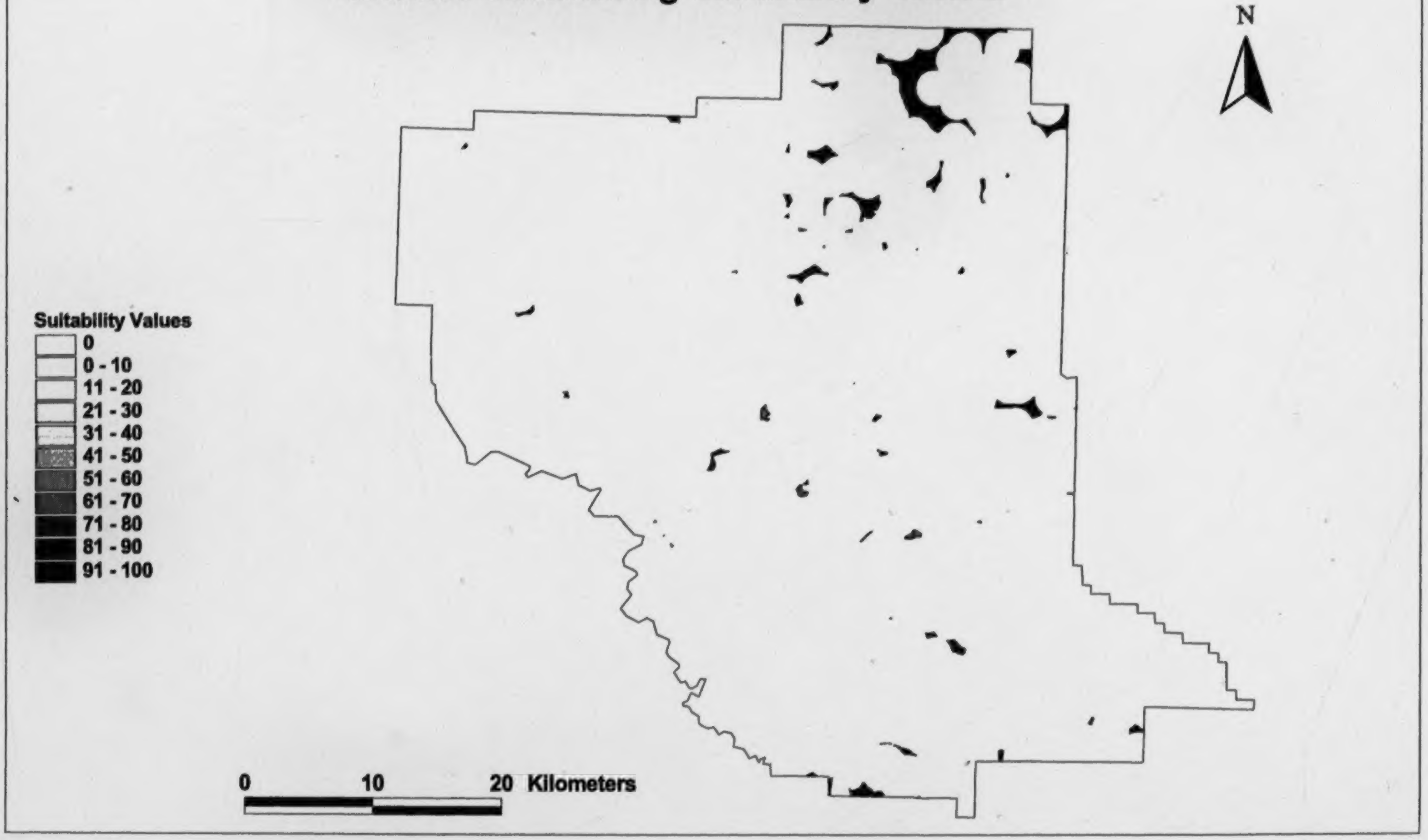

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure D-6 Scenario No. 2 Landfill Siting Exclusionary Criteria with Preventive Measures

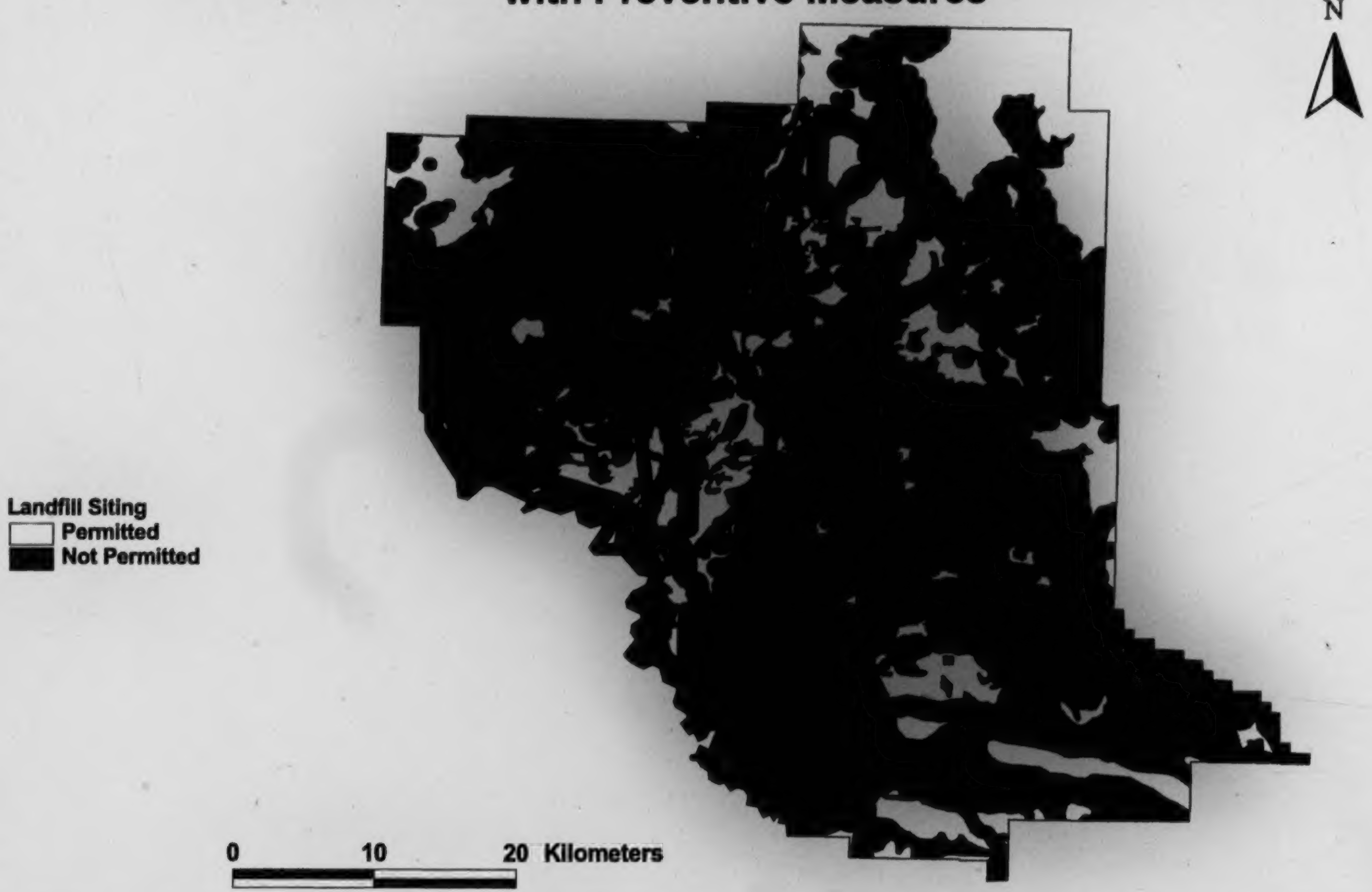

N
Landfill Siting
Permitted
Not Permitted
0
10
20 Kilometers

Figure D-7 Scenario No. 2 Landfill Siting No Exclusionary Criteria with Preventive Measures

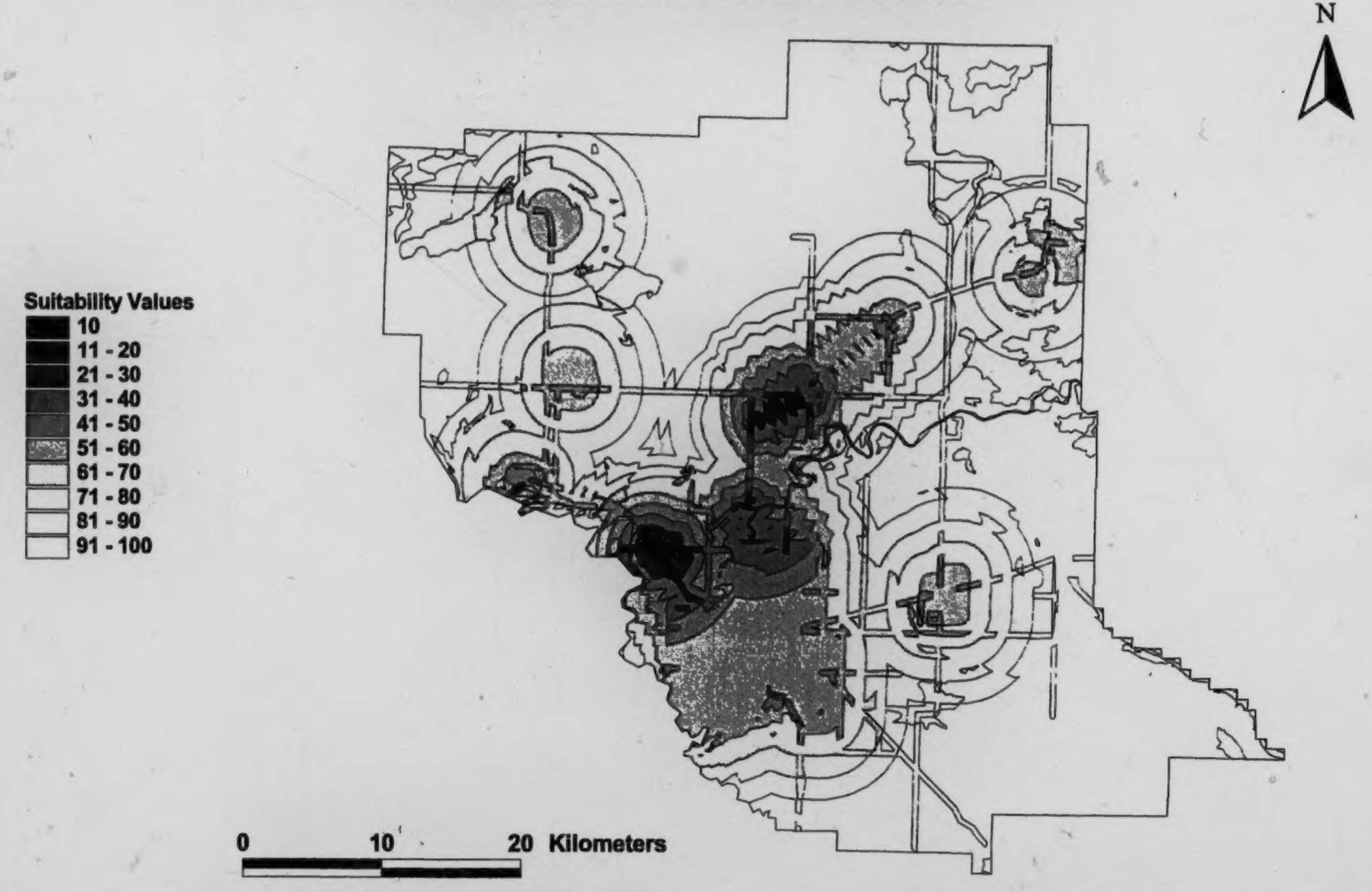

N
Suitability Values
10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure D-8 Scenario No. 2 Landfill Siting
Community Criteria with Preventive Measures

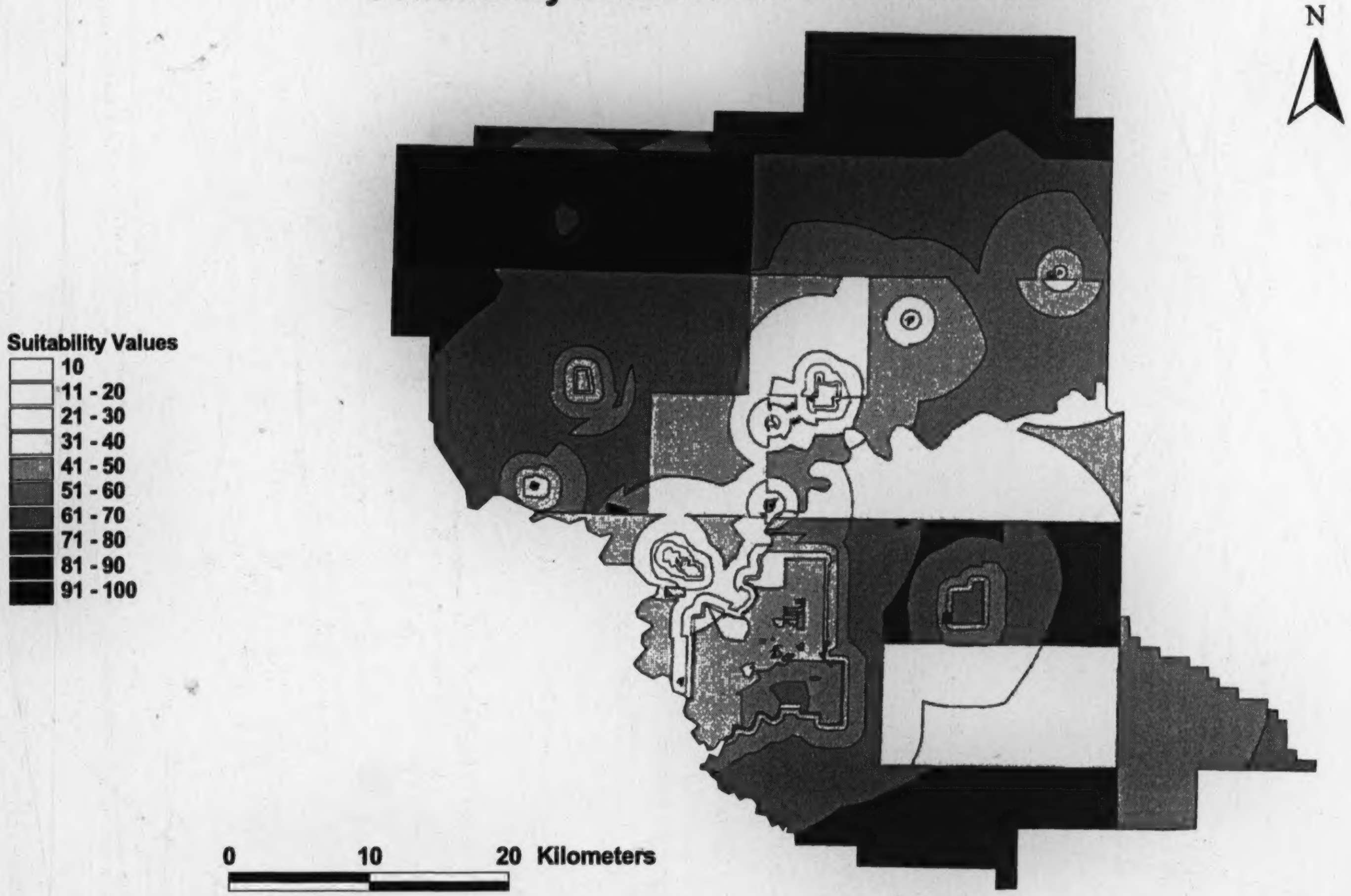

N
Suitability Values
10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure D-9 Scenario No. 2 Final Landfill Siting Considering Preventive Measures

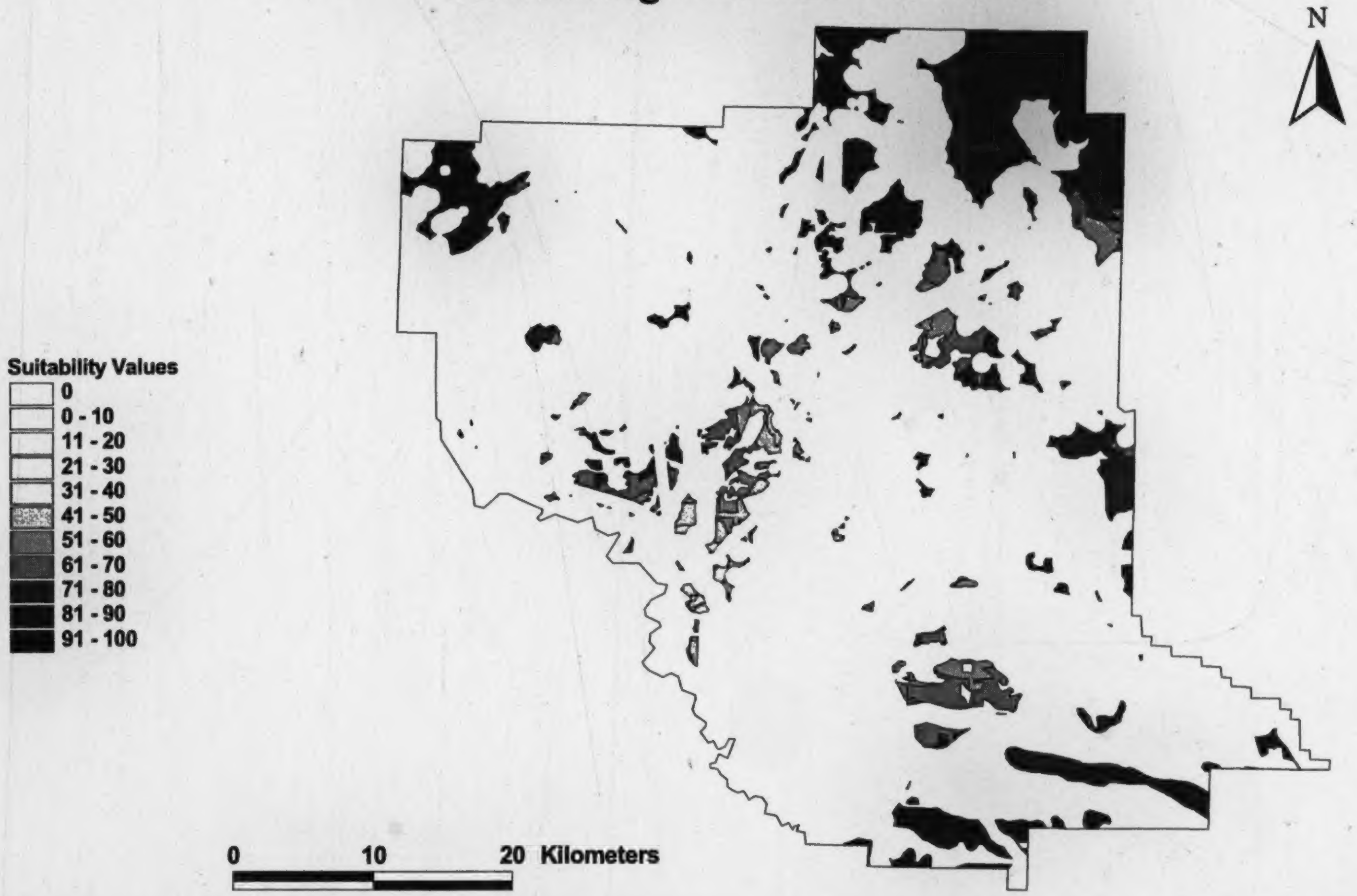

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure D-10 Scenario No. 2 Final Landfill Siting Considering Preventive Measures and without Considering Community Criteria

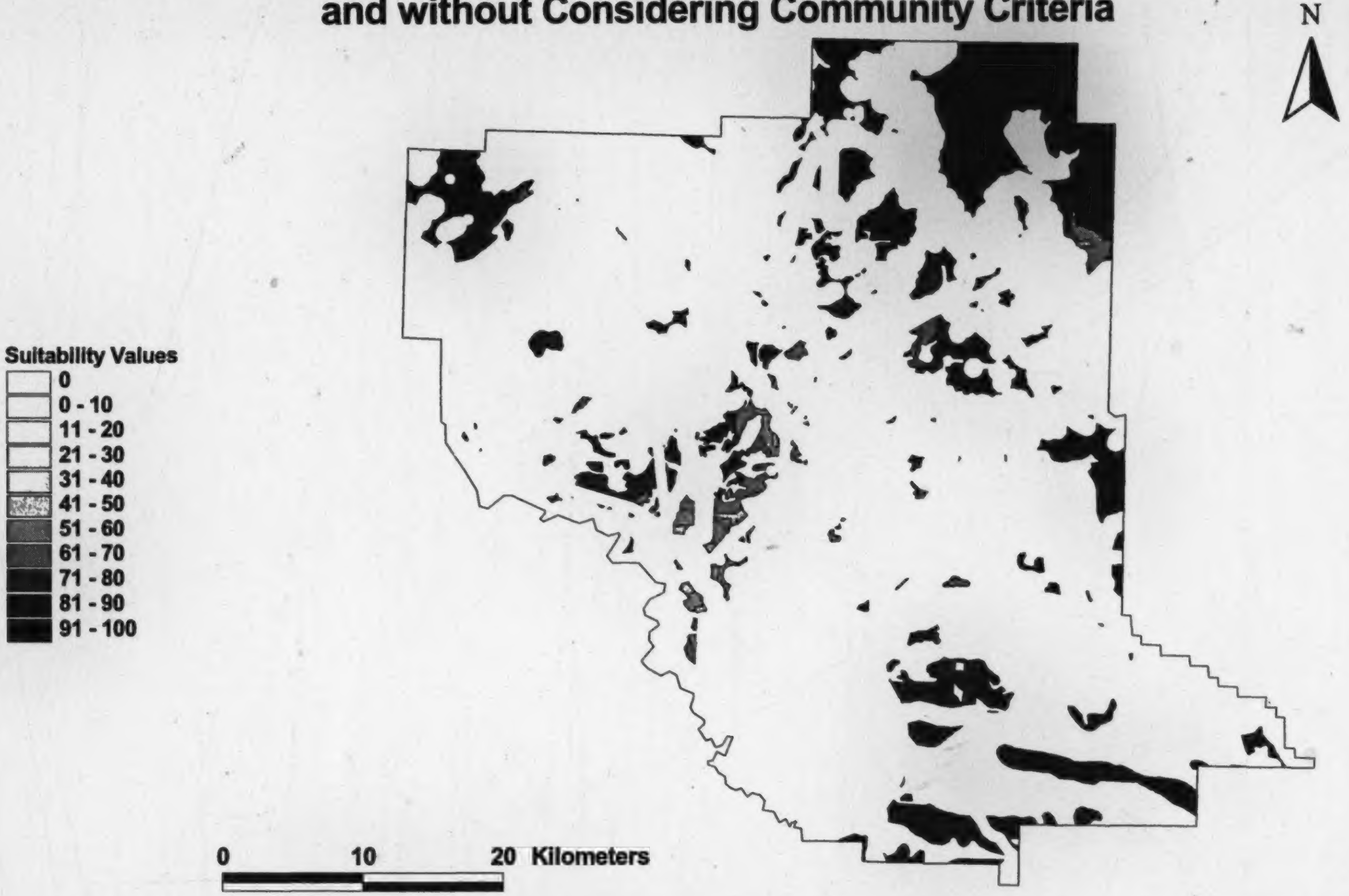

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure D-11 Scenario No. 3 Landfill Exclusionary Criteria
with Extreme Preventive Measures

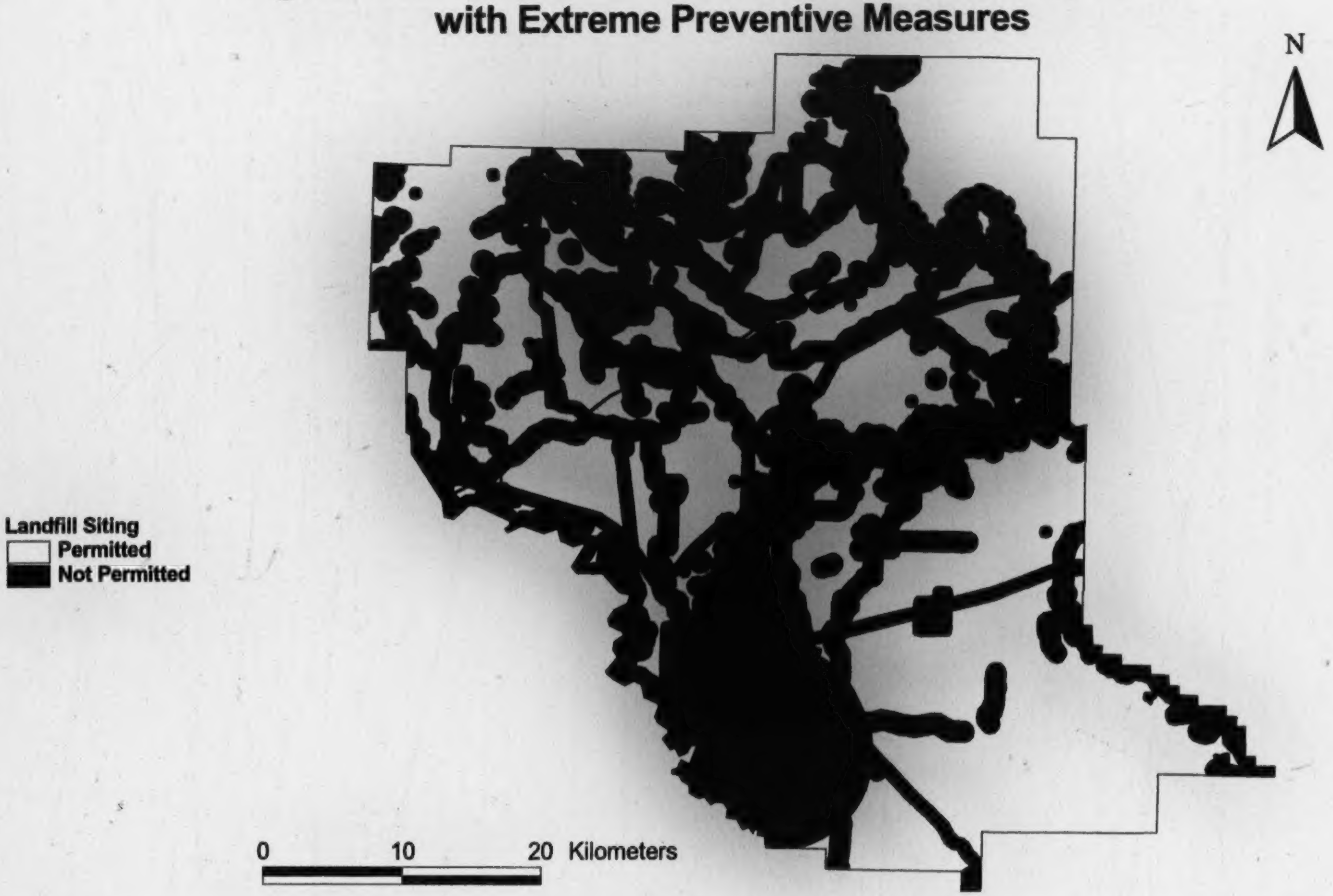

N
Landfill Siting
Permitted
Not Permitted
0
10
20 Kilometers

Figure D-12 Scenario No. 3 Landfill No Exclusionary Criteria with Extreme Preventive Measures

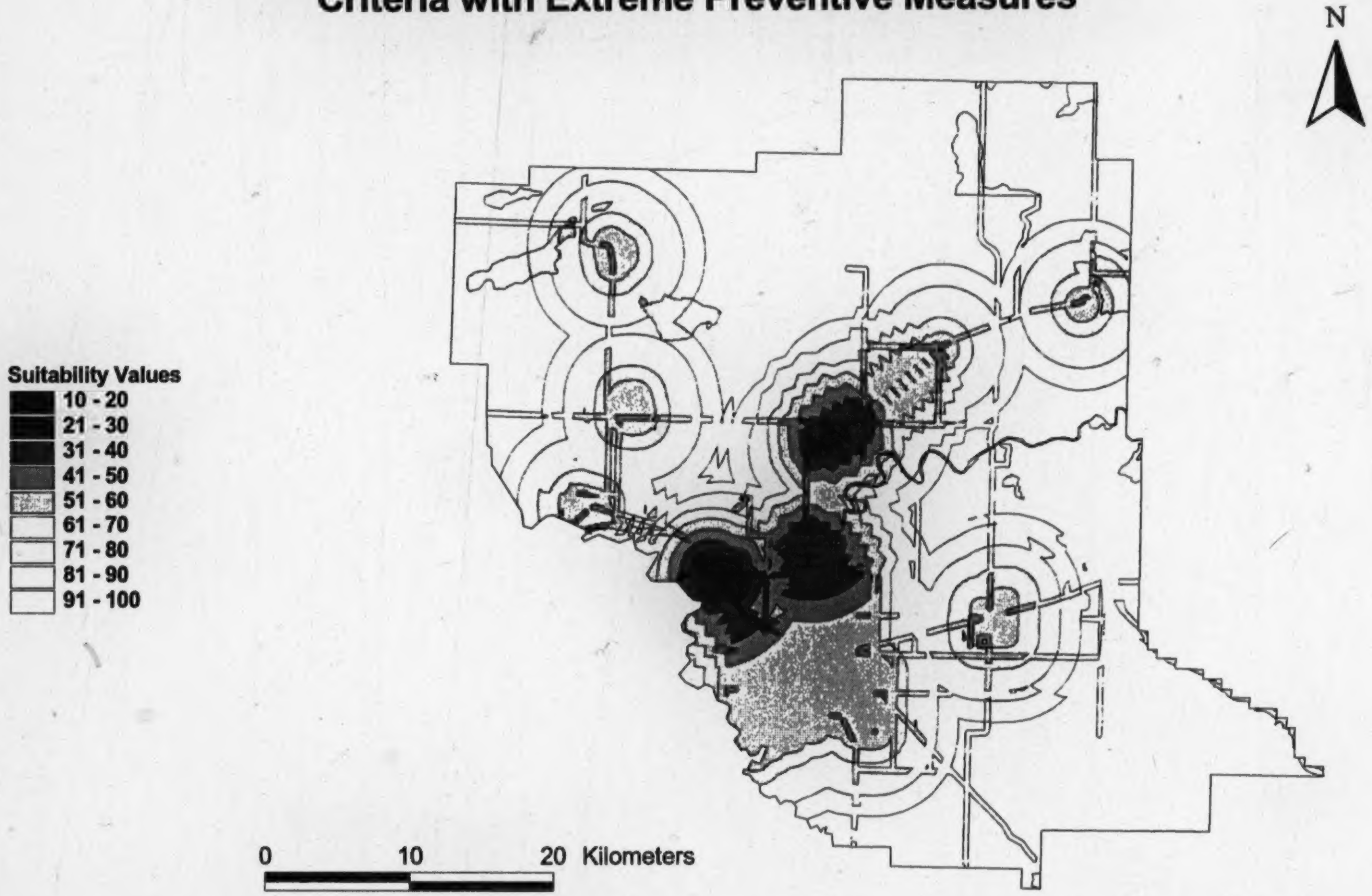

N
Suitability Values
10 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure D-13 Scenario No. 3 Landfill Community Criteria with Extreme Preventive Measures

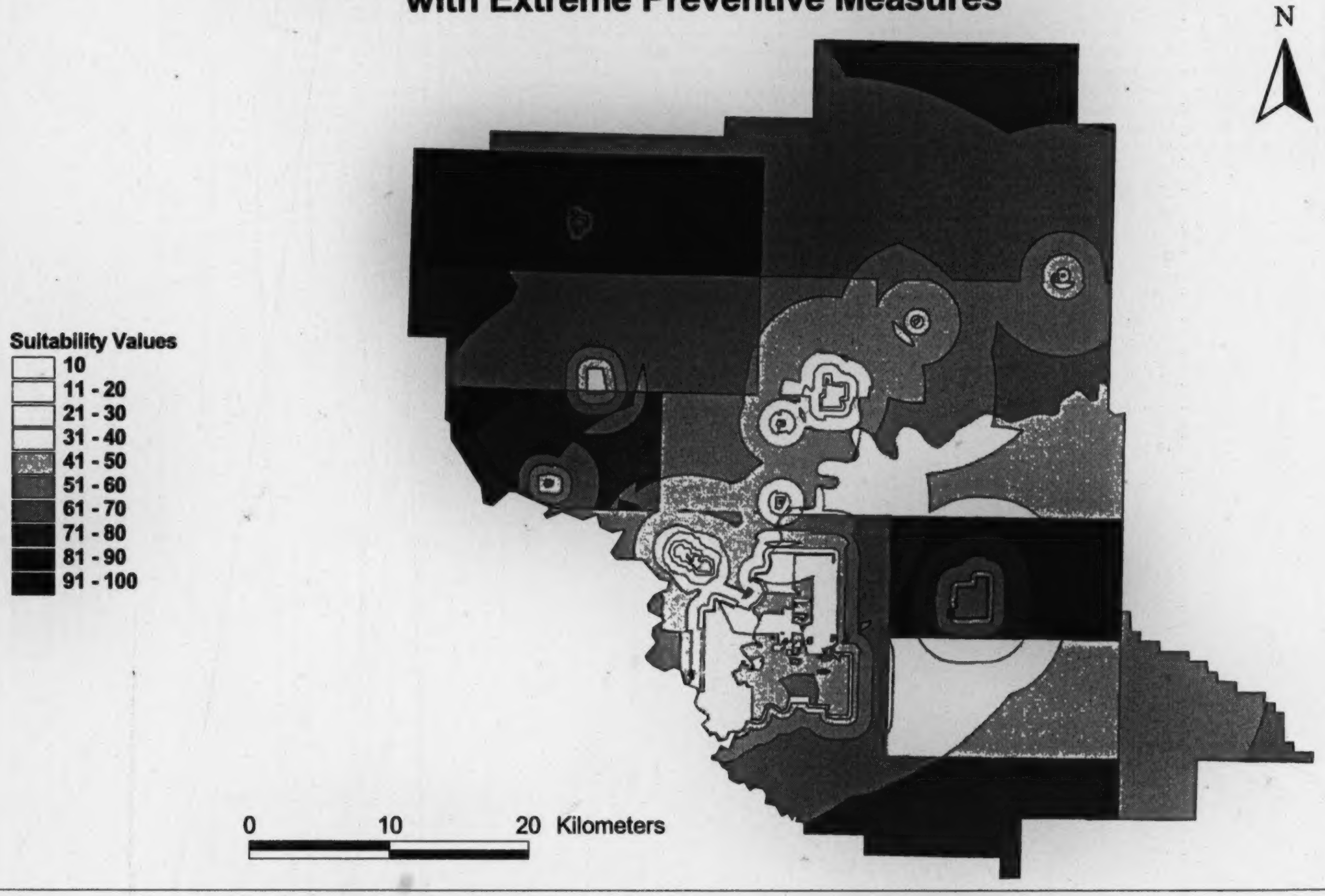

N
Suitability Values
10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure D-14 Scenario No. 3 Final Landfill Siting with Extreme Preventive Measures

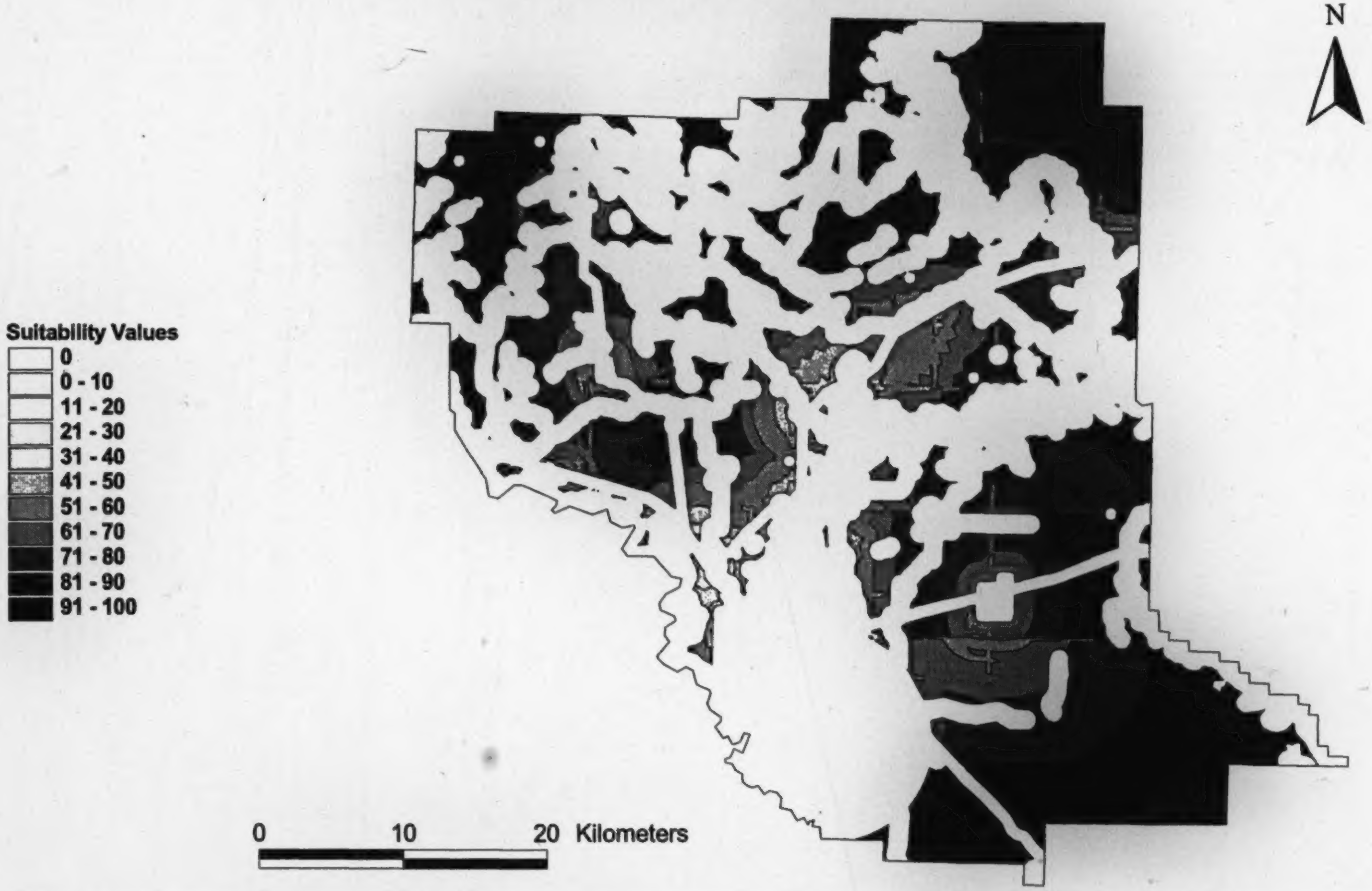
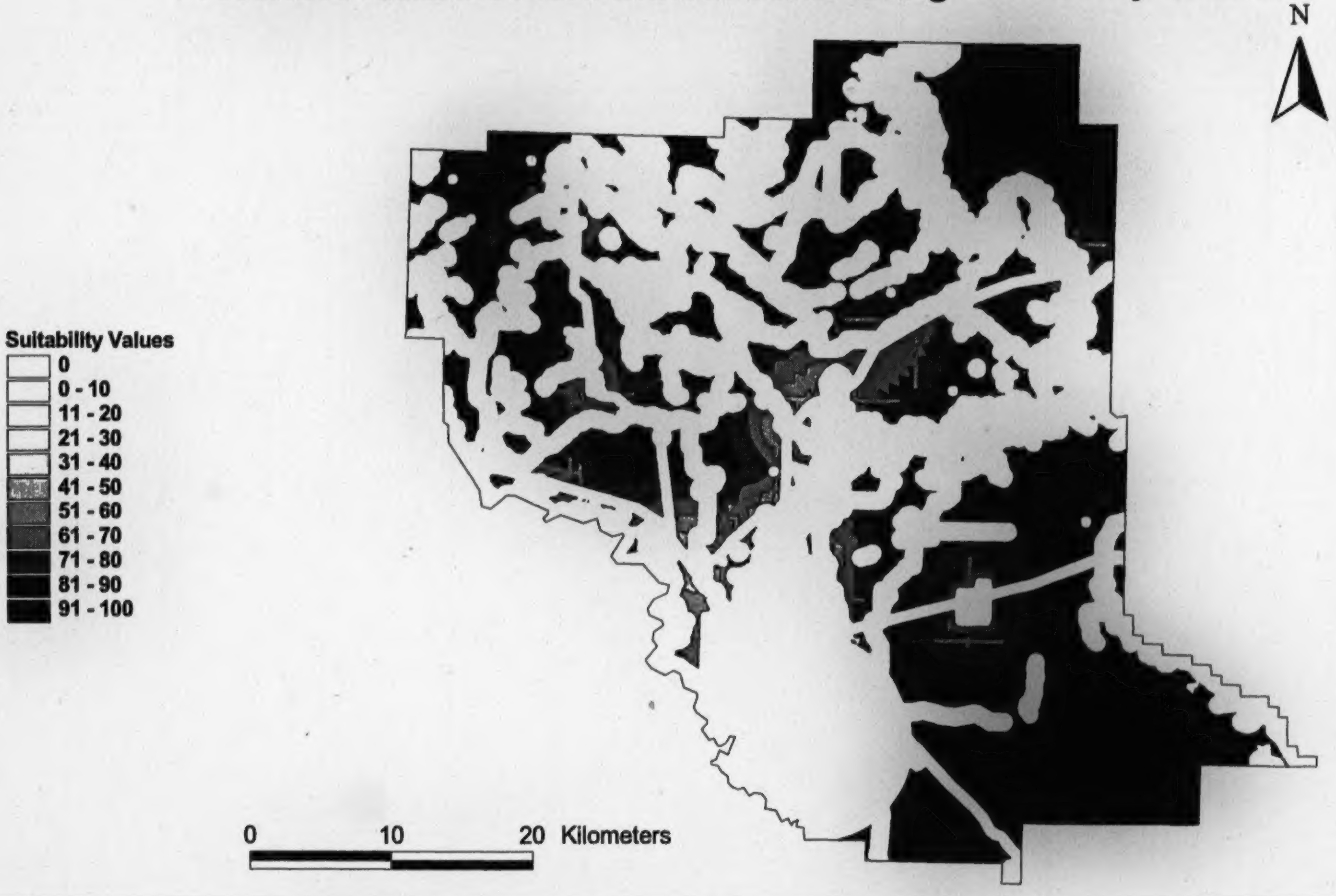

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure D-15 Scenario No. 3 Final Landfill Siting with Extreme Preventive Measures and without Considering Community Criteria


N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

APPENDIX E

Figure E-1 Scenario No. 1 Airport Siting Exclusionary Criteria

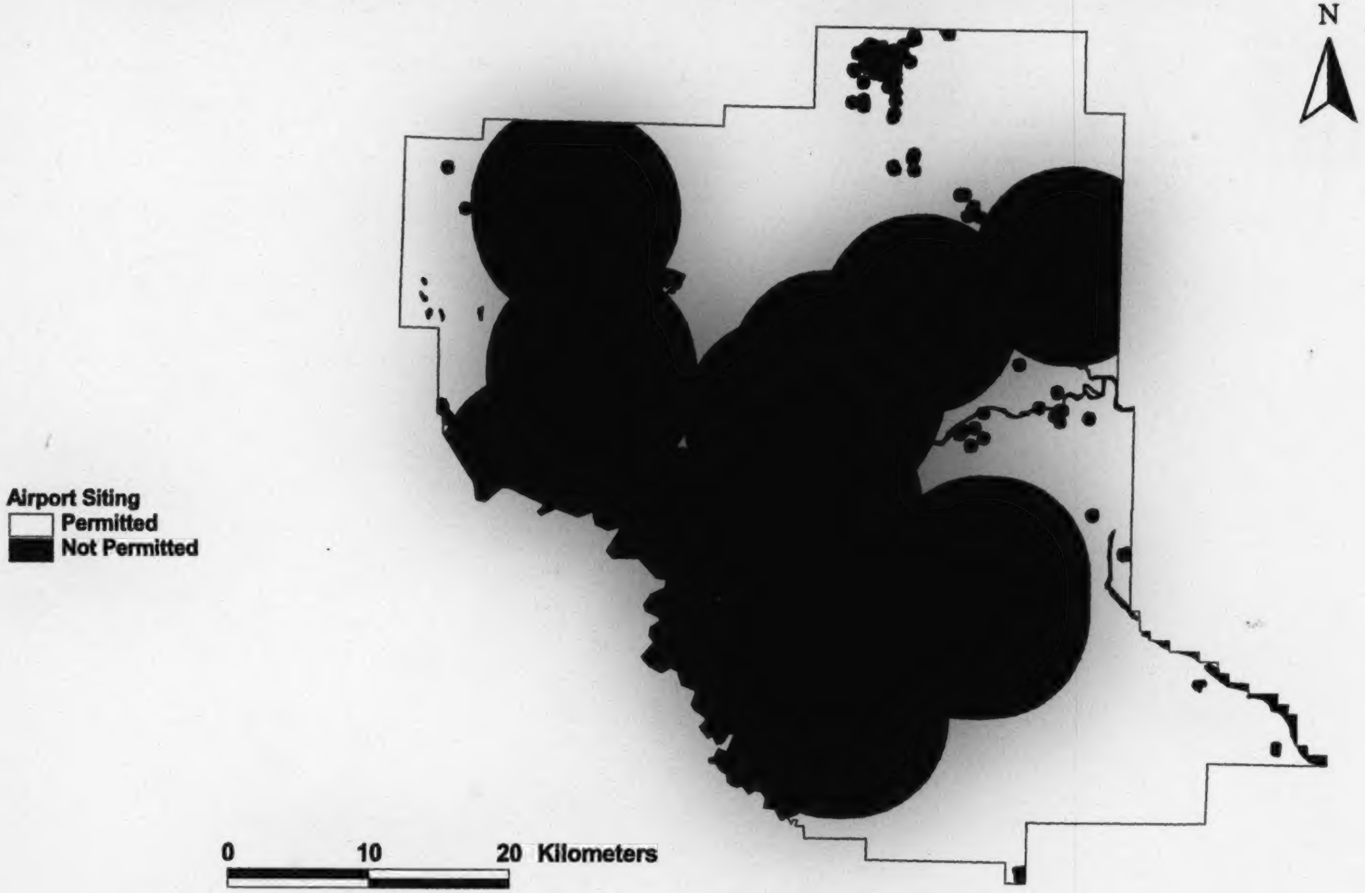

N
Airport Siting
Permitted
Not Permitted
0
10
20 Kilometers

Figure E-2 Scenario No. 1 Airport Siting No Exclusionary Criteria

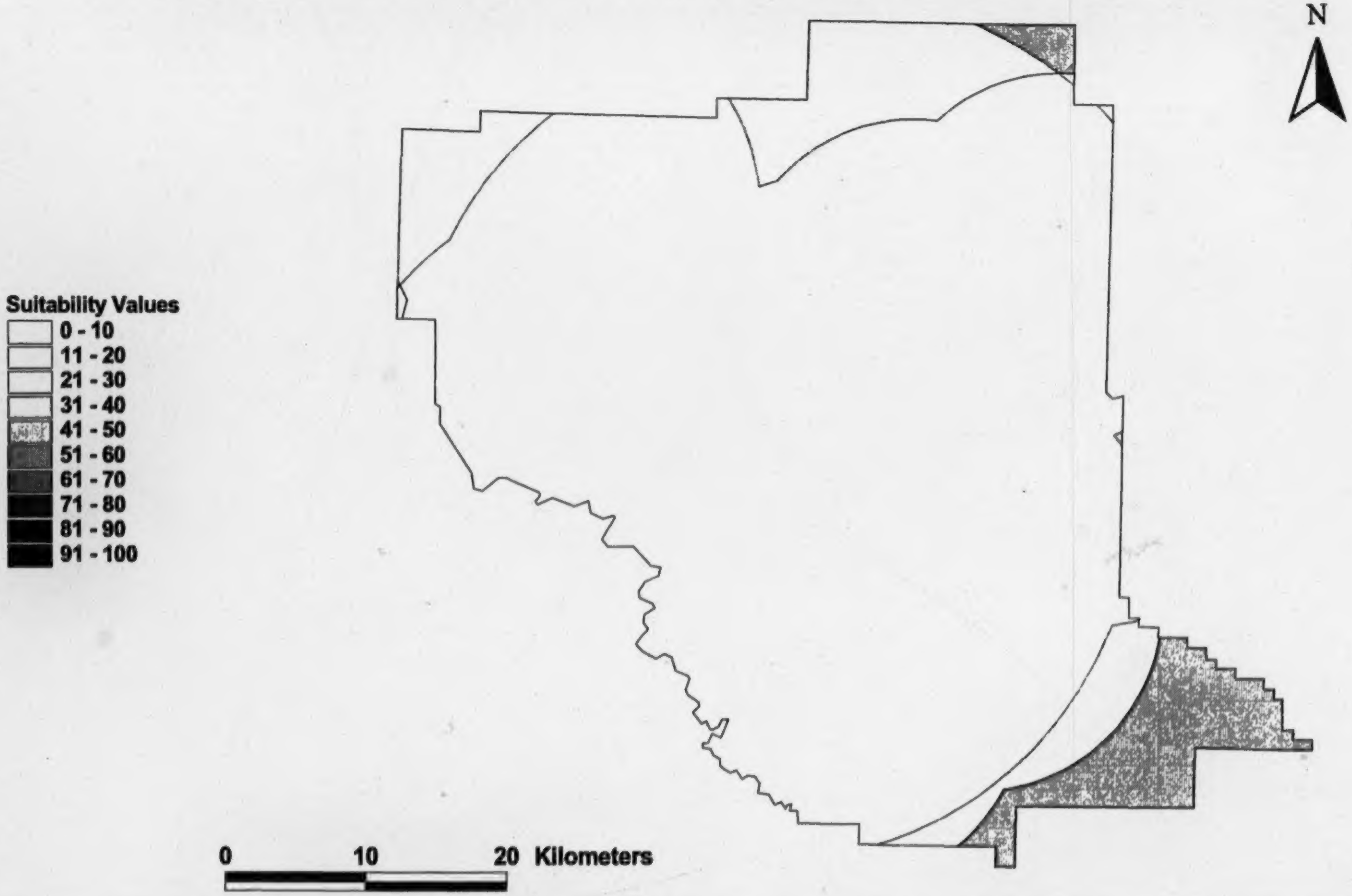
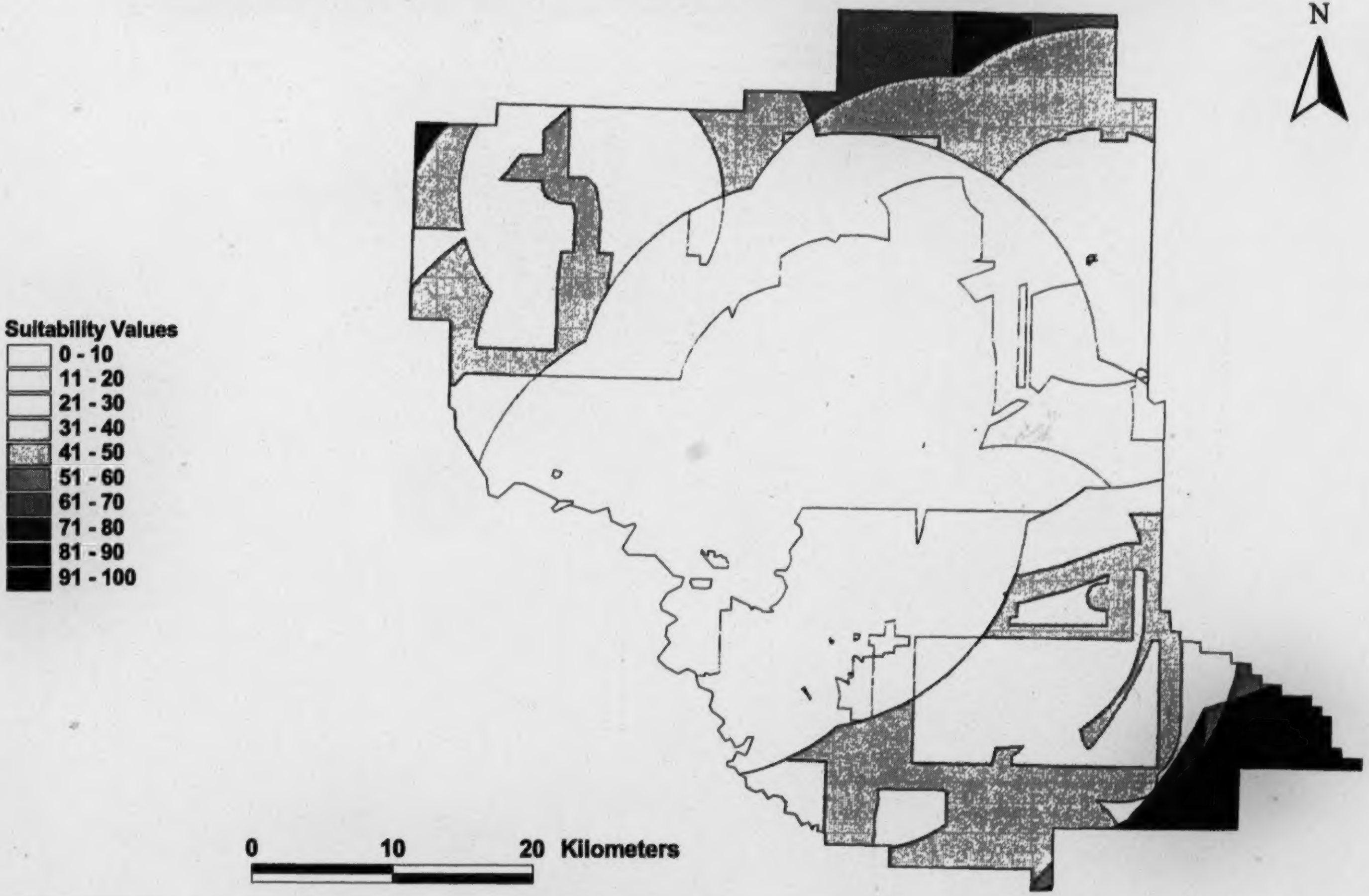

N
Suitability Values
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure E-3 Scenario No. 1 Airport Siting Community Criteria


N
Suitability Values
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

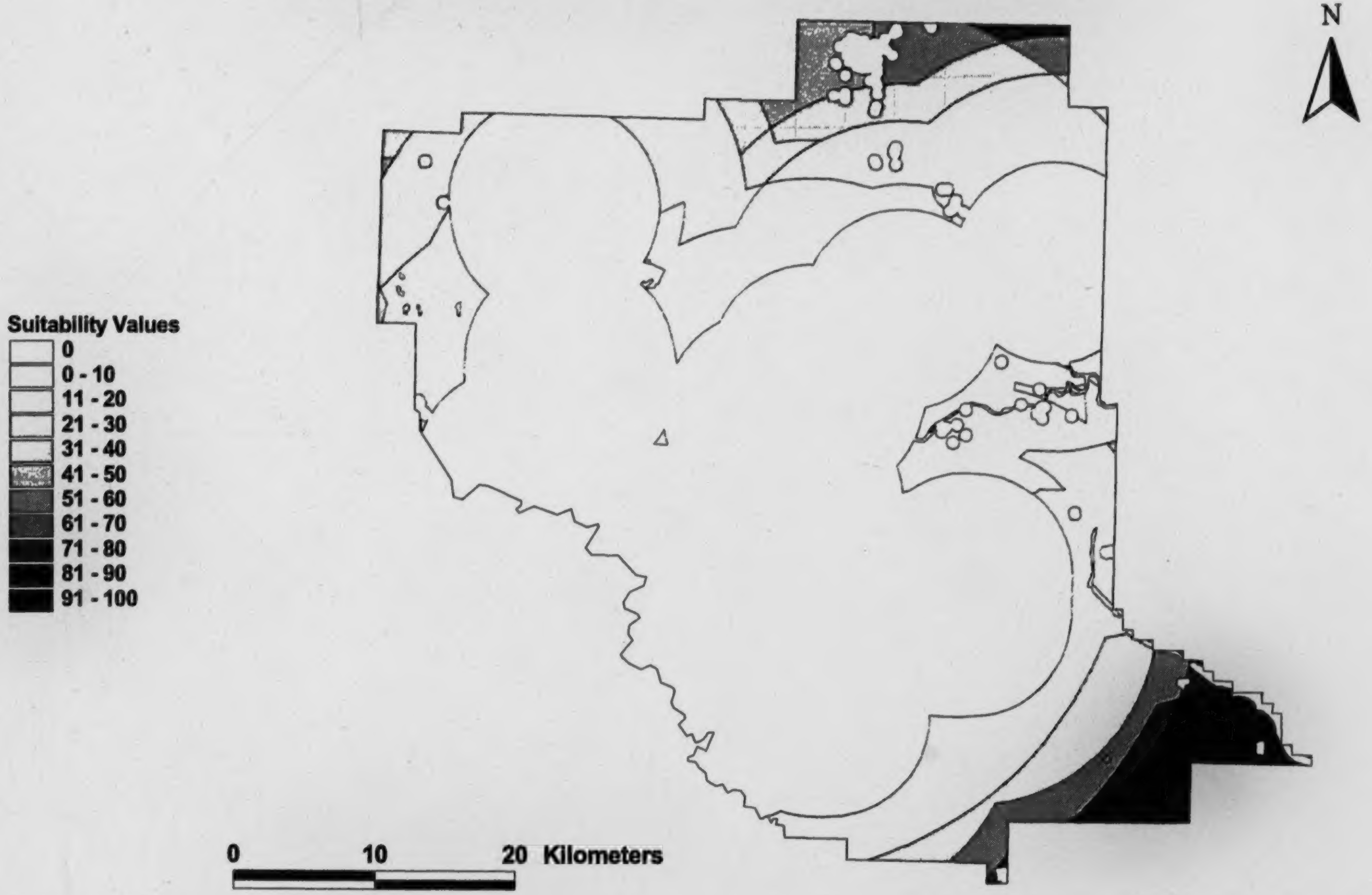

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure E-4 Scenario No. 1 Final Airport Siting

Figure E-5 Scenario No. 1 Final Airport Siting
Without Considering Community Criteria

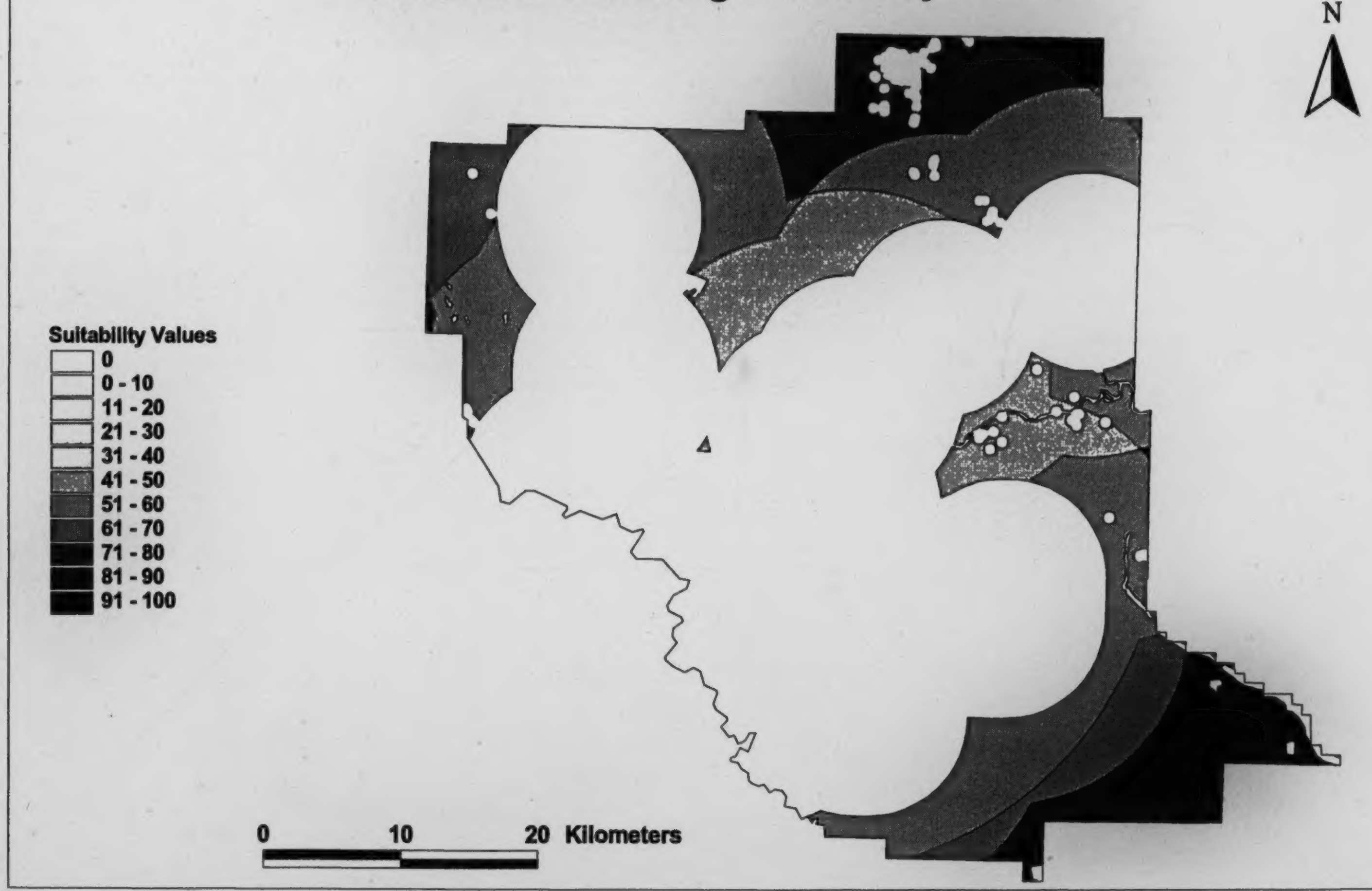

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure E-6 Scenario No. 2 Airport Siting Exclusionary Criteria with Preventive Measures

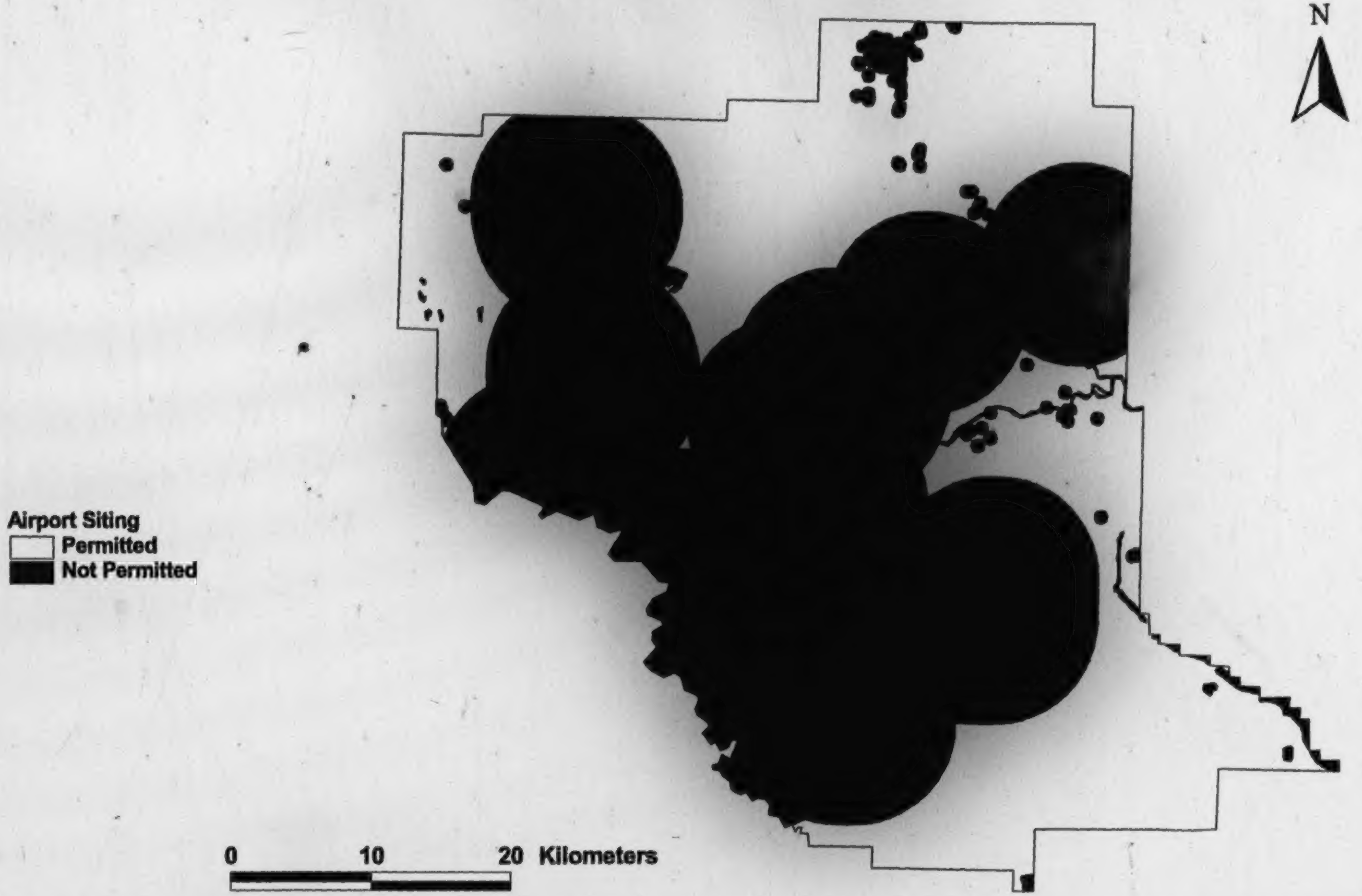

N
Airport Siting
Permitted
Not Permitted
0
10
20 Kilometers

Figure E-7 Scenario No. 2 Airport Siting No Exclusionary Criteria with Preventive Measures

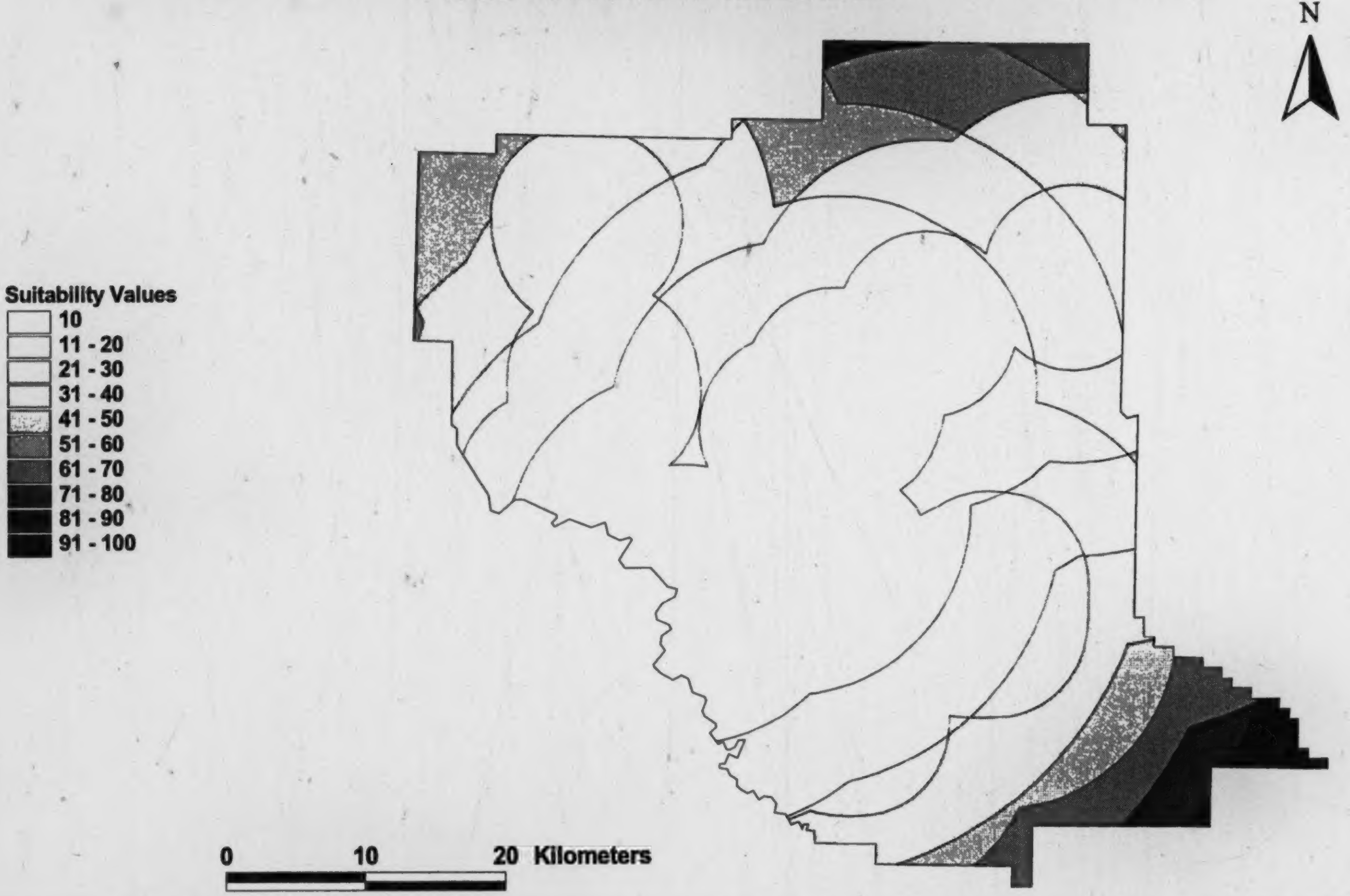

N
Suitability Values
10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure E-8 Scenario No. 2 Airport Siting Community Criteria with Preventive Measures

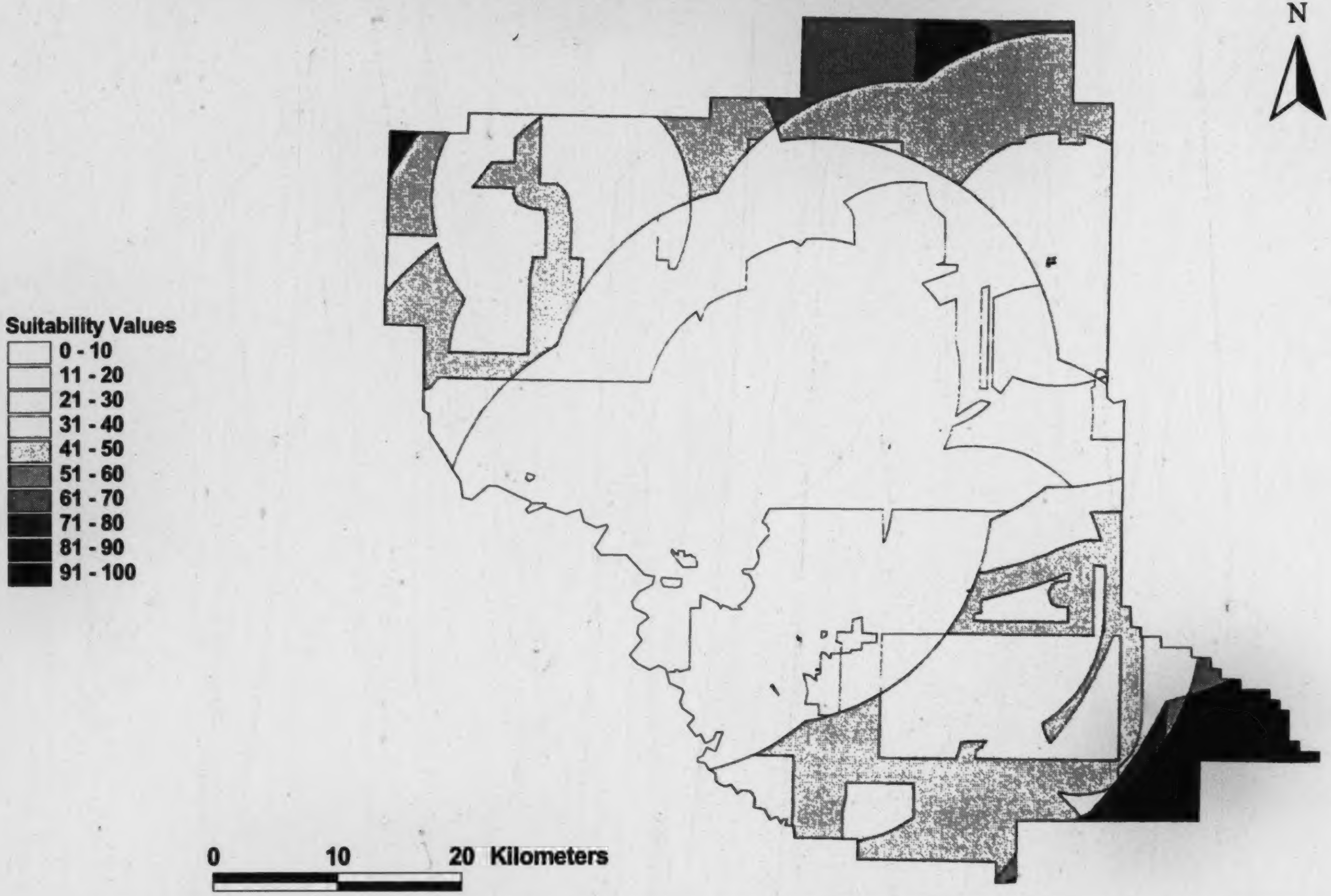

N
Suitability Values
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure E-9 Scenario No. 2 Final Airport Siting
Considering Preventive Measures

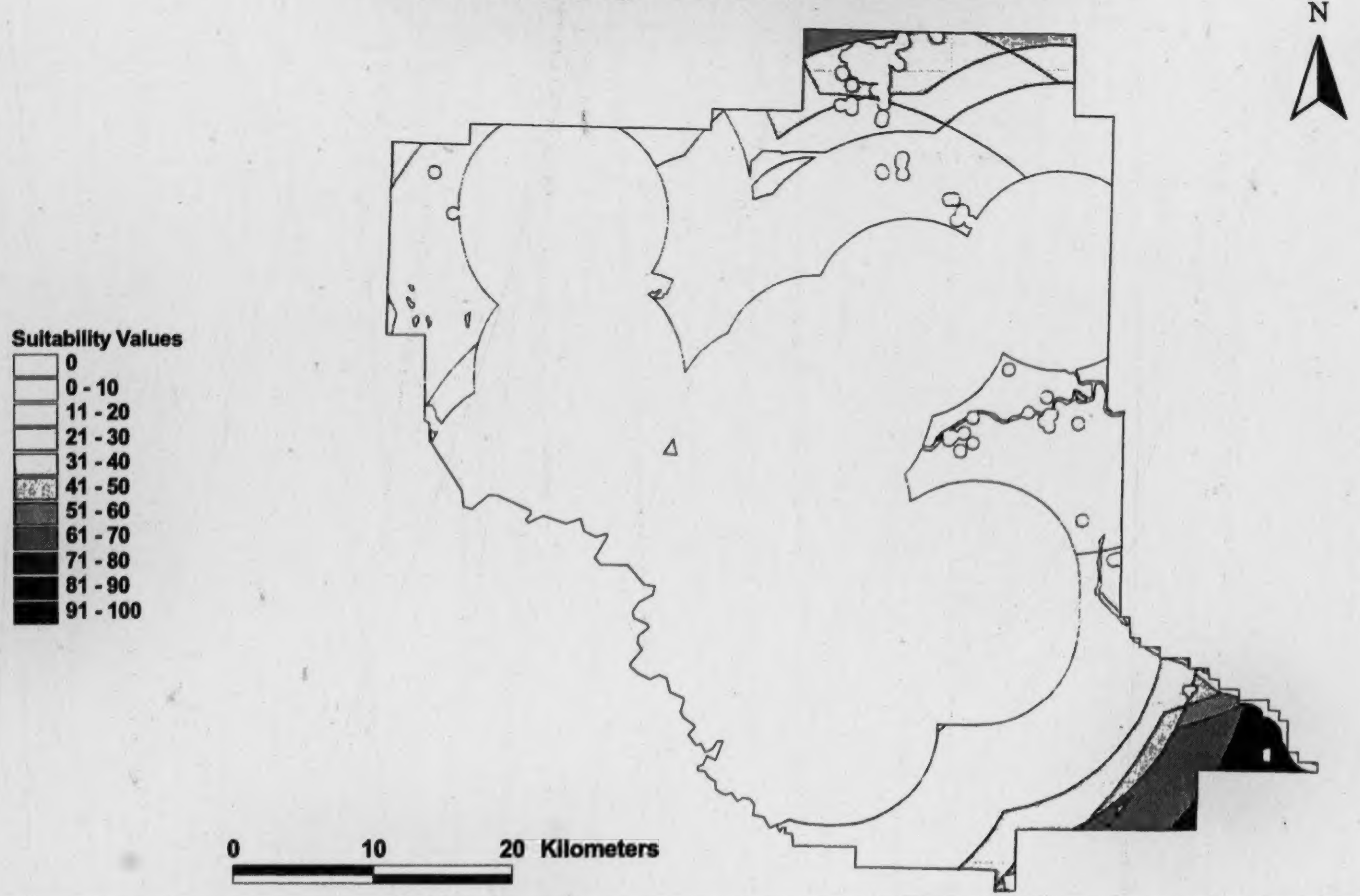

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure E-10 Scenario No. 2 Final Airport Siting with Preventive Measures and without Considering Community Criteria

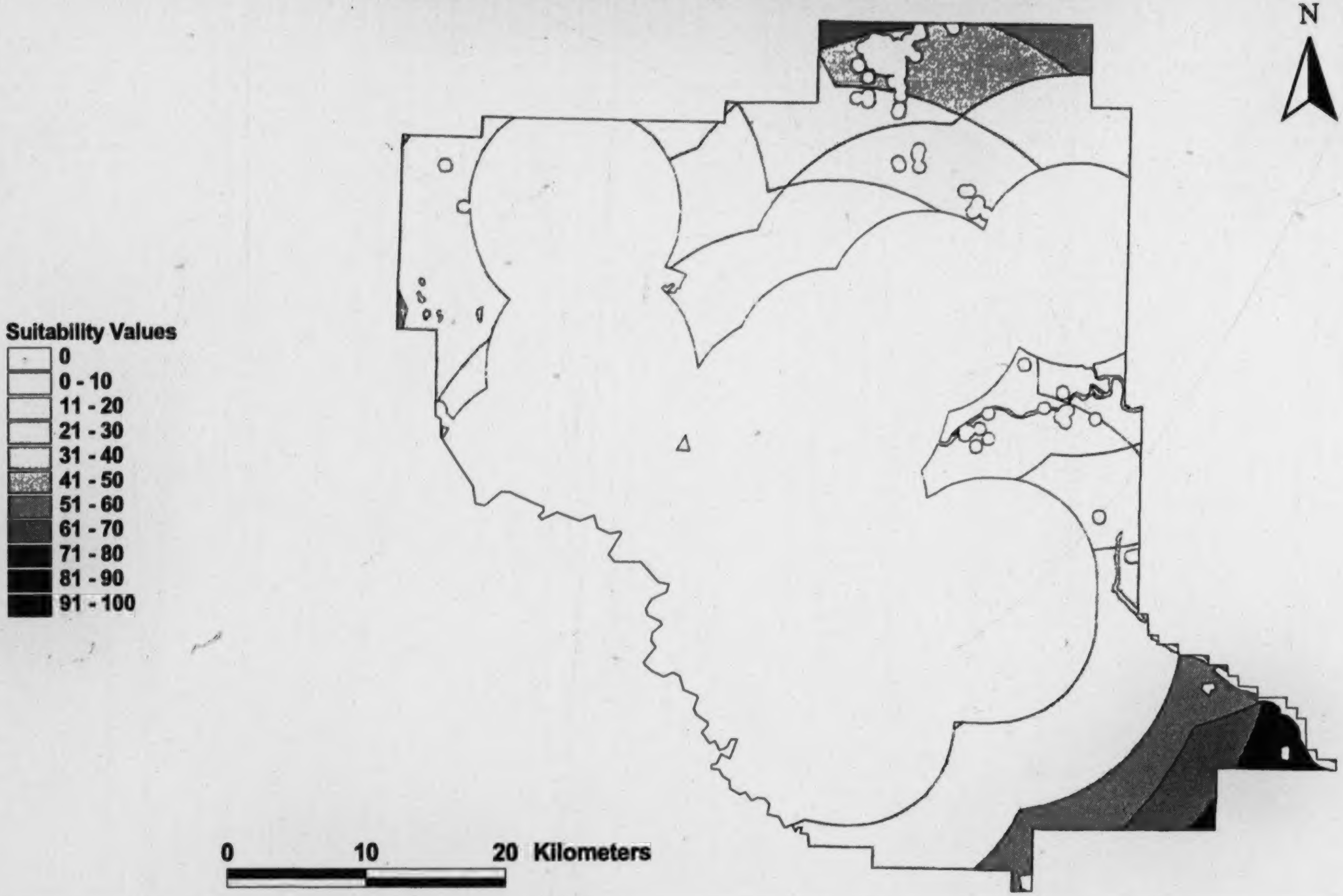

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure E-11 Scenario No. 3 Airport Siting Exclusionary Criteria with Extreme Preventive Measures

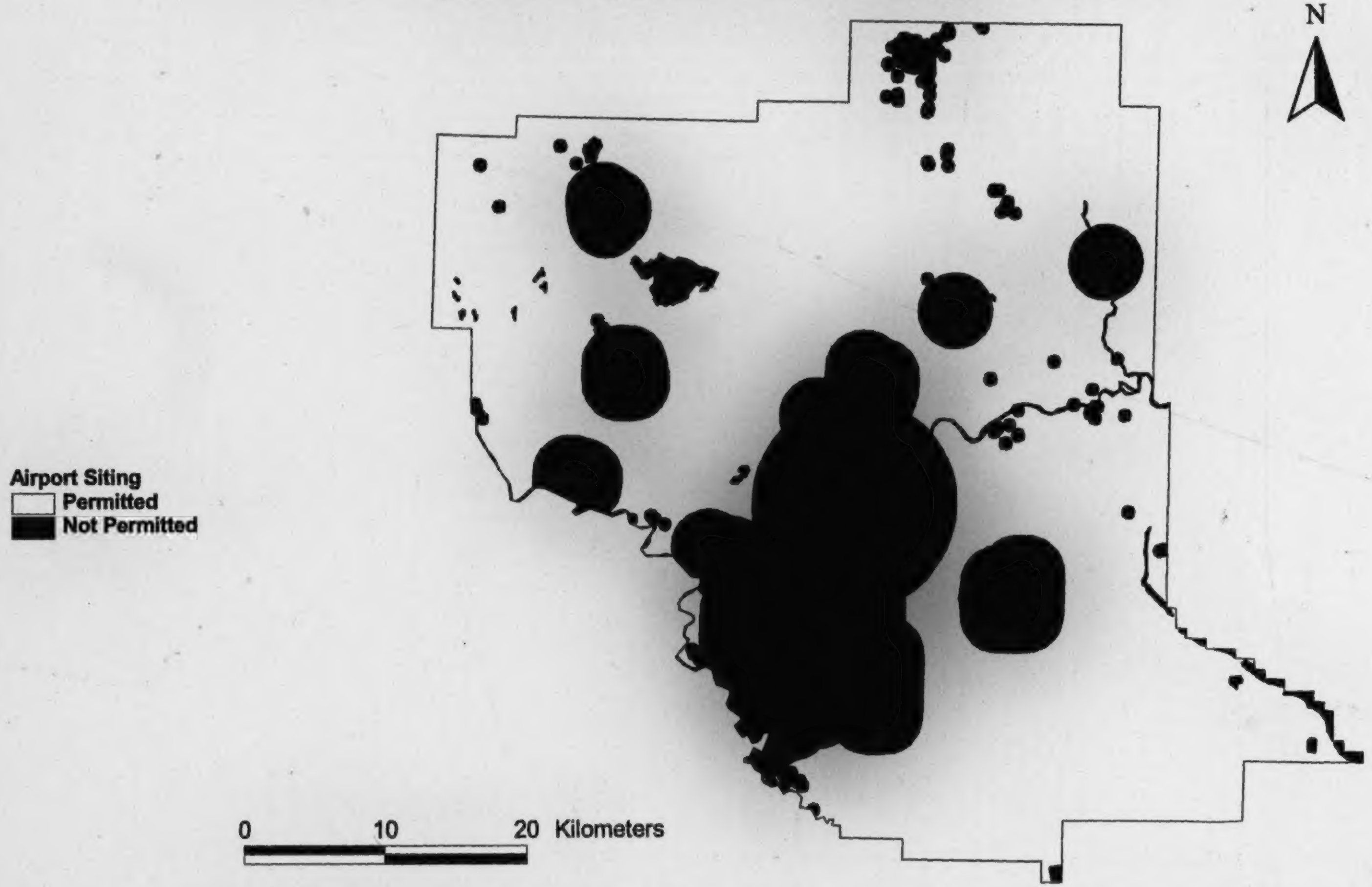

N
Airport Siting
Permitted
Not Permitted
0
10
20 Kilometers

Figure E-12 Scenario No. 3 Airport Siting Non Exclusionary Criteria with Extreme Preventive Measures

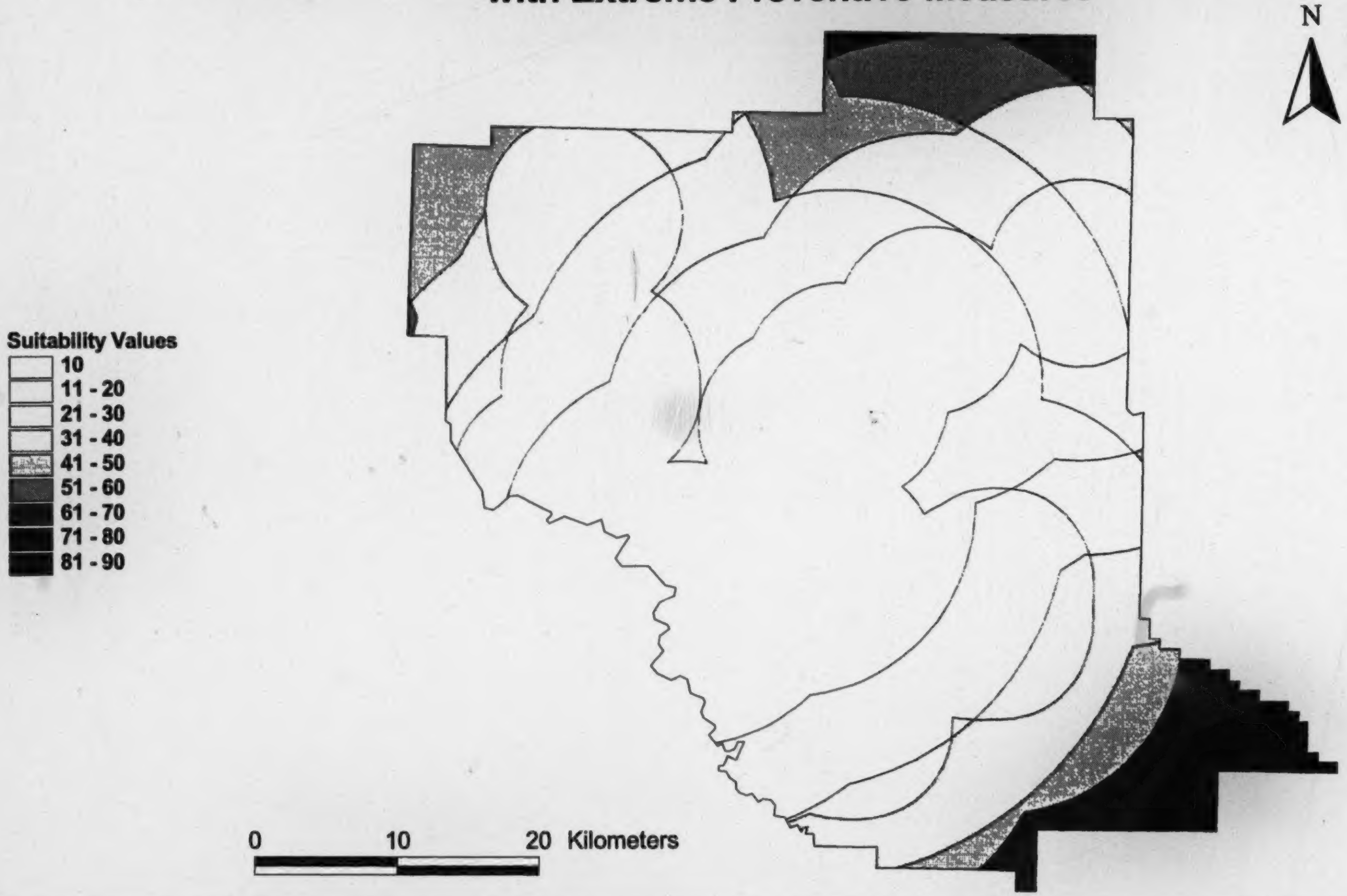

N
Suitability Values
10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
0
10
20 Kilometers

Figure E-13 Scenario No. 3 Airport Siting Community Criteria with Extreme Preventive Measures

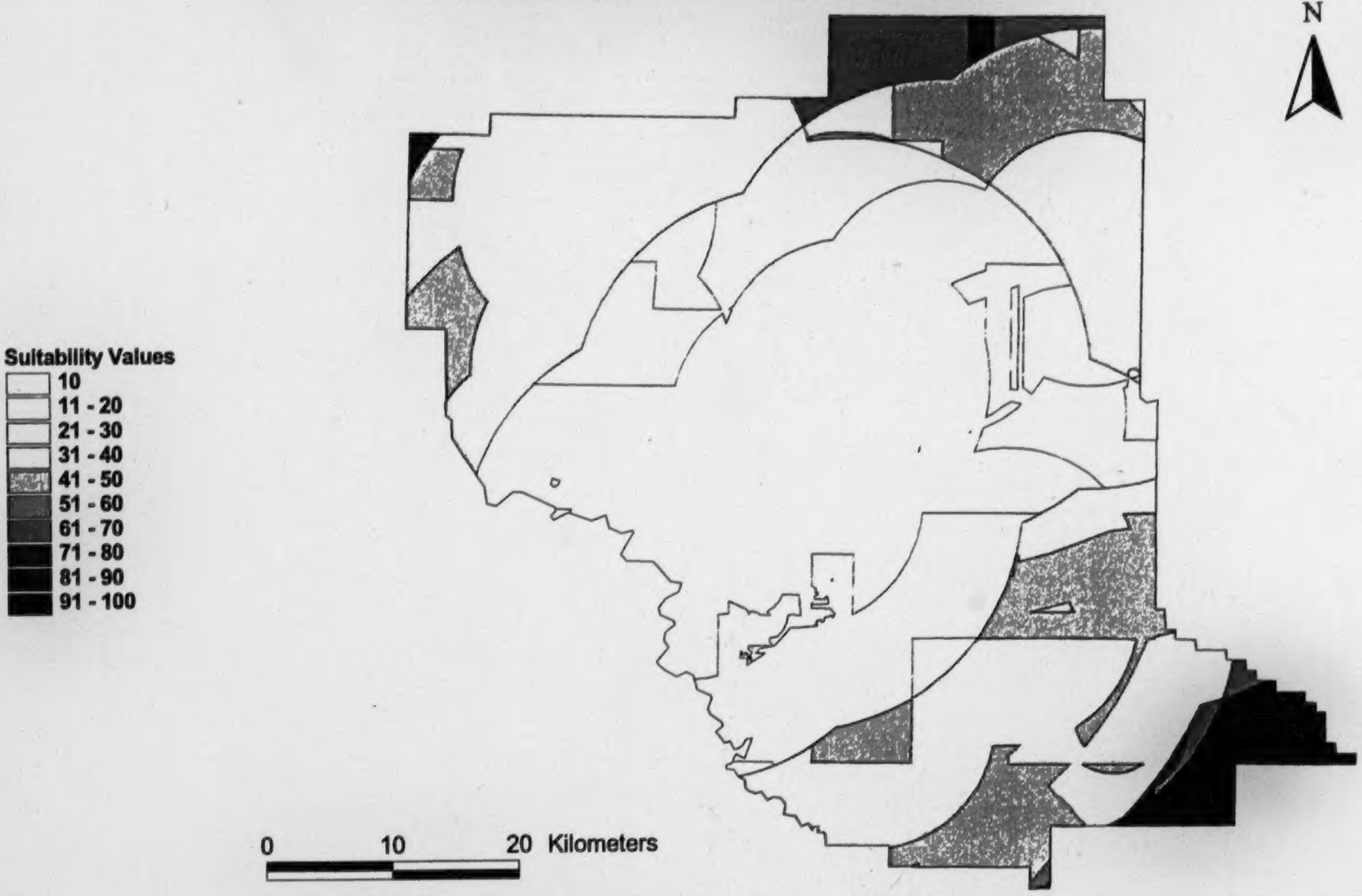

N
Suitability Values
10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure E-14 Scenario No. 3 Final Airport Siting with Extreme Preventive Measures

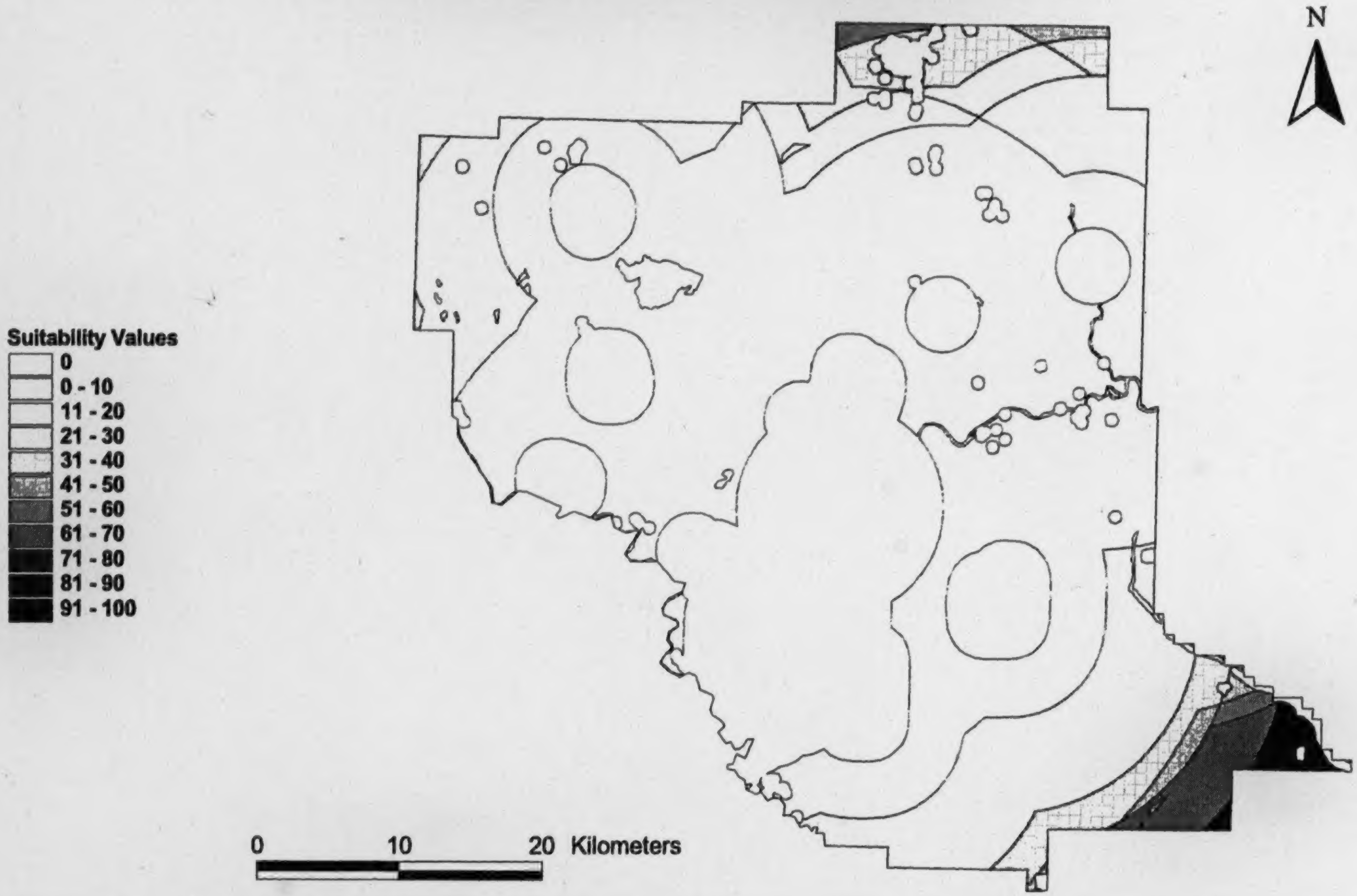
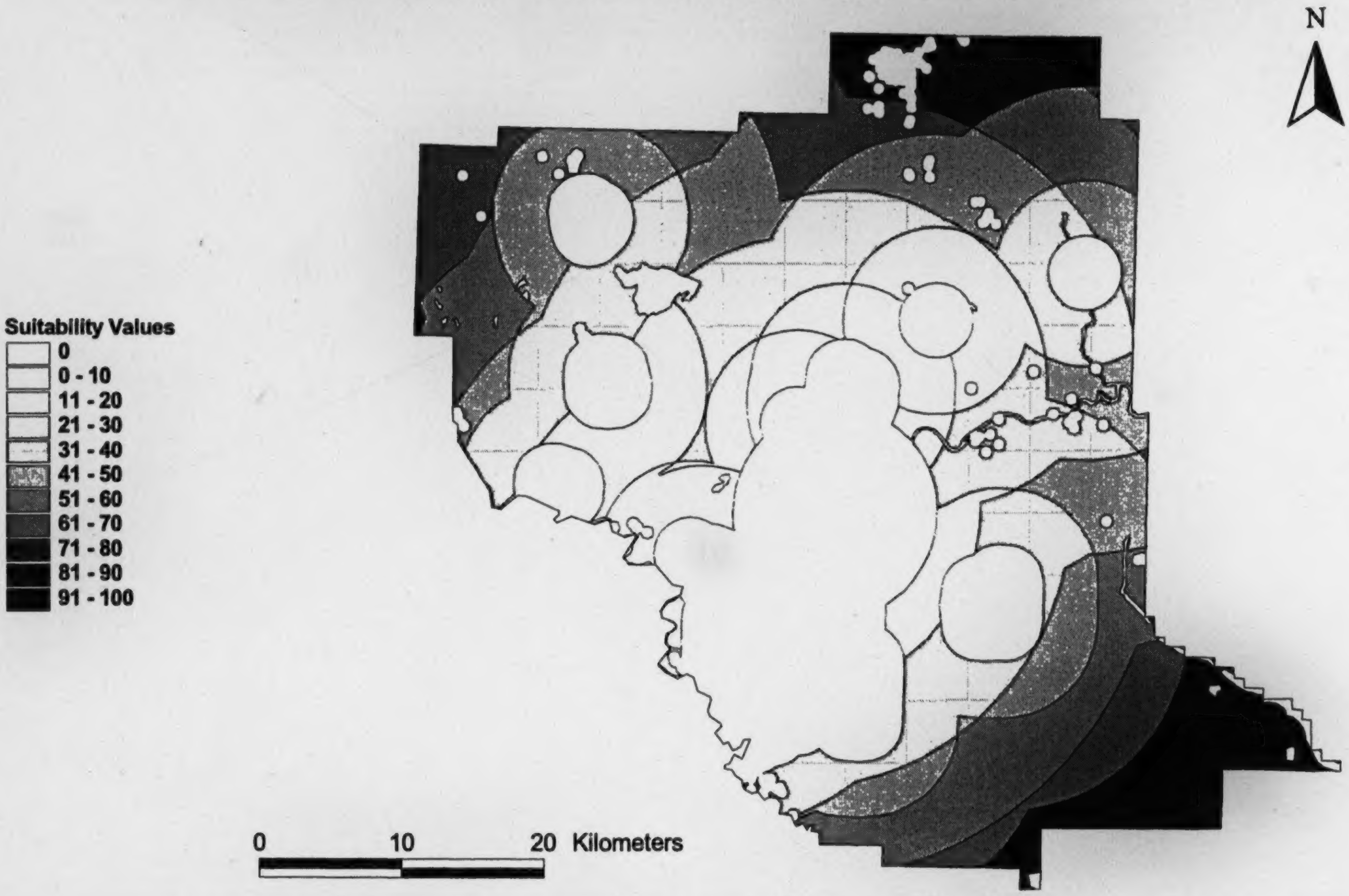

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

Figure E-15 Scenario No. 3 Final Airport Siting with Extreme Preventive Measures and without Considering Community Criteria


N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
0
10
20 Kilometers

APPENDIX F

Figure F-1 Final Landfill Siting without Preventive Measures and Using an Absolute Suitability Scale for Comparison

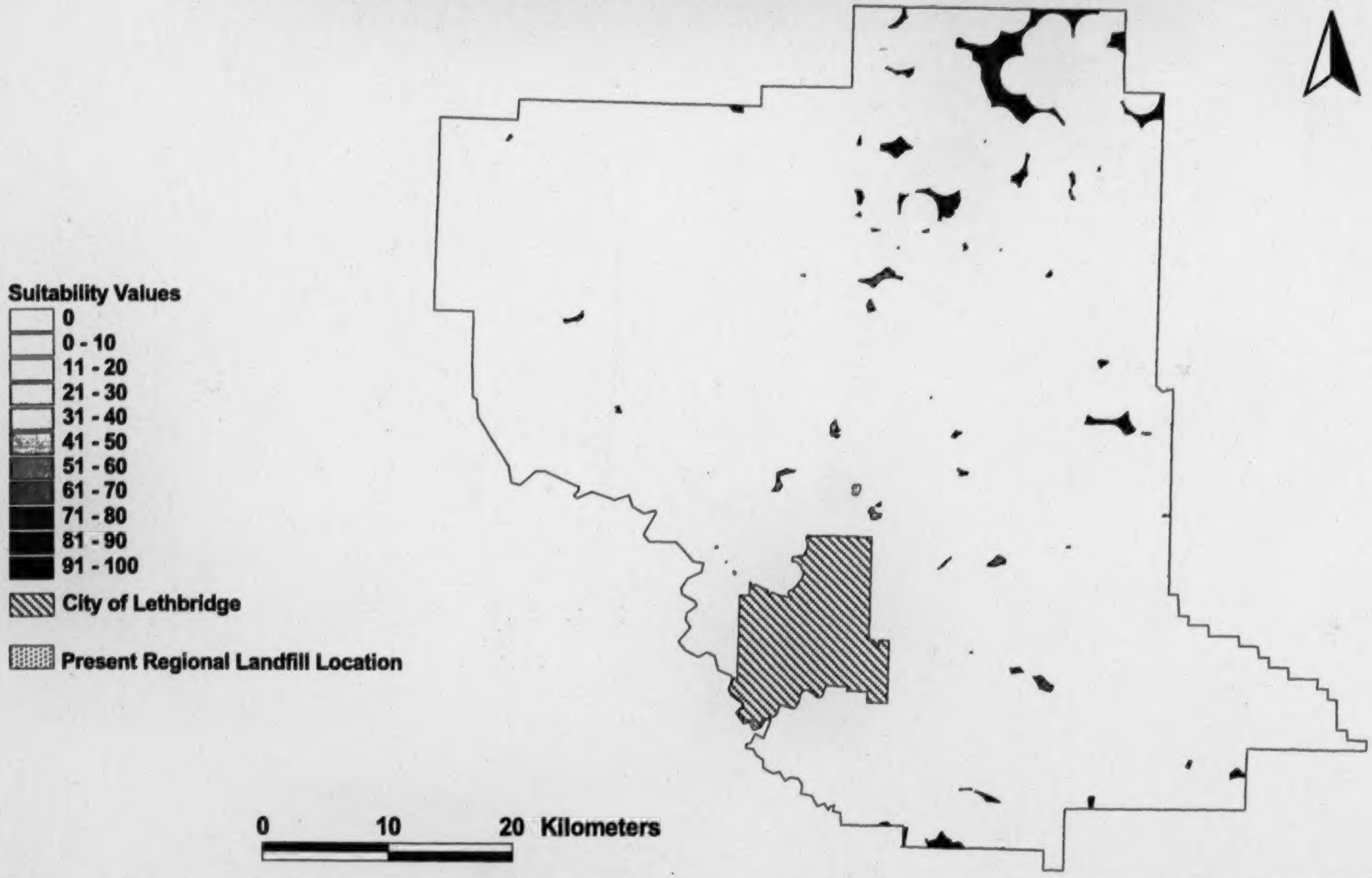

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
City of Lethbridge
Present Regional Landfill Location
0
10
20 Kilometers

Figure F-2 Final Landfill Siting without Considering Preventive Measures Nor Community Criteria and Using an Absolute Scale for Comparison

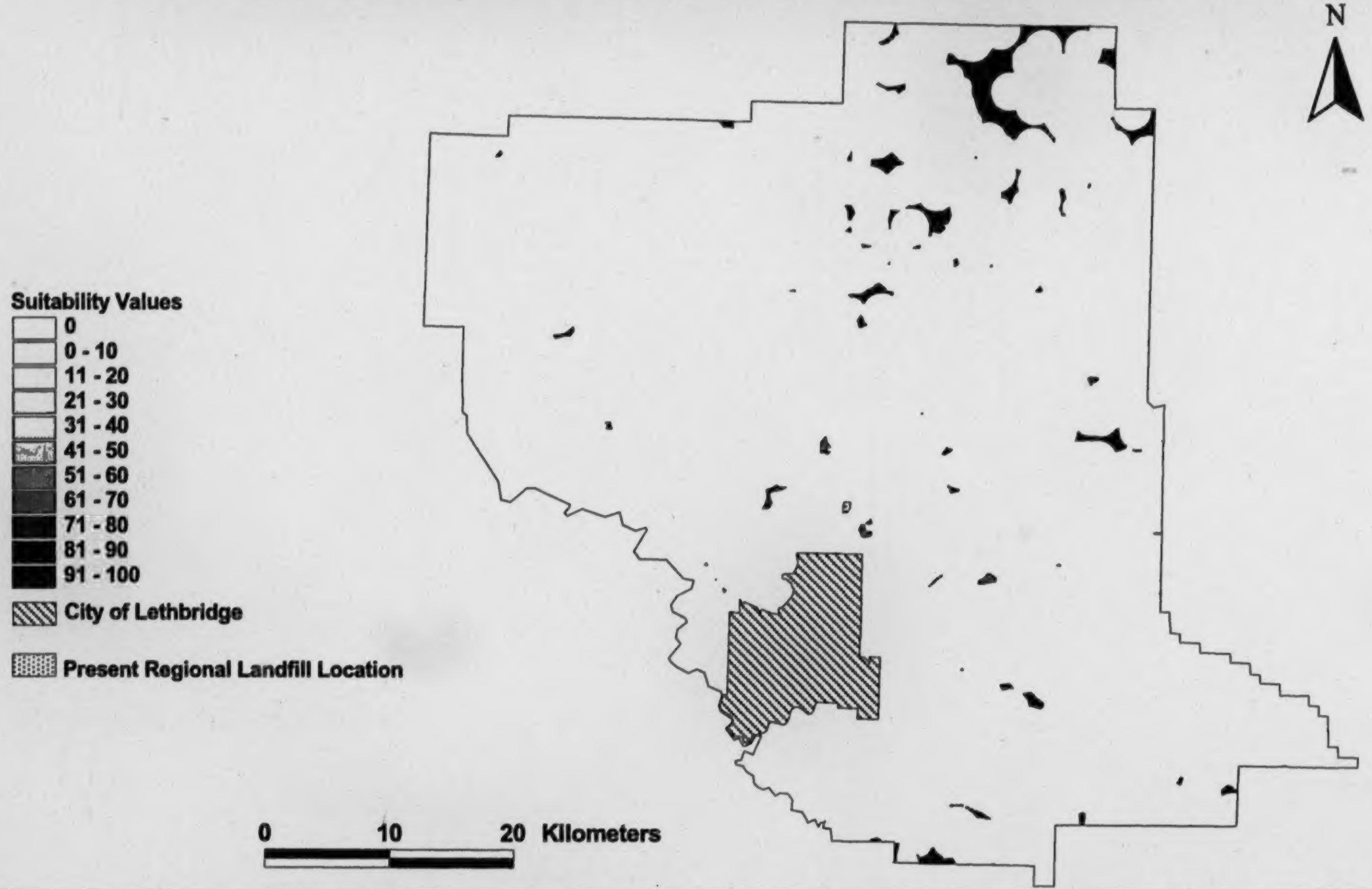

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
City of Lethbridge
Present Regional Landfill Location
0
10
20 Kilometers

Figure F-3 Final Landfill Siting Considering Preventive Measures and Using an Absolute Scale for Comparison

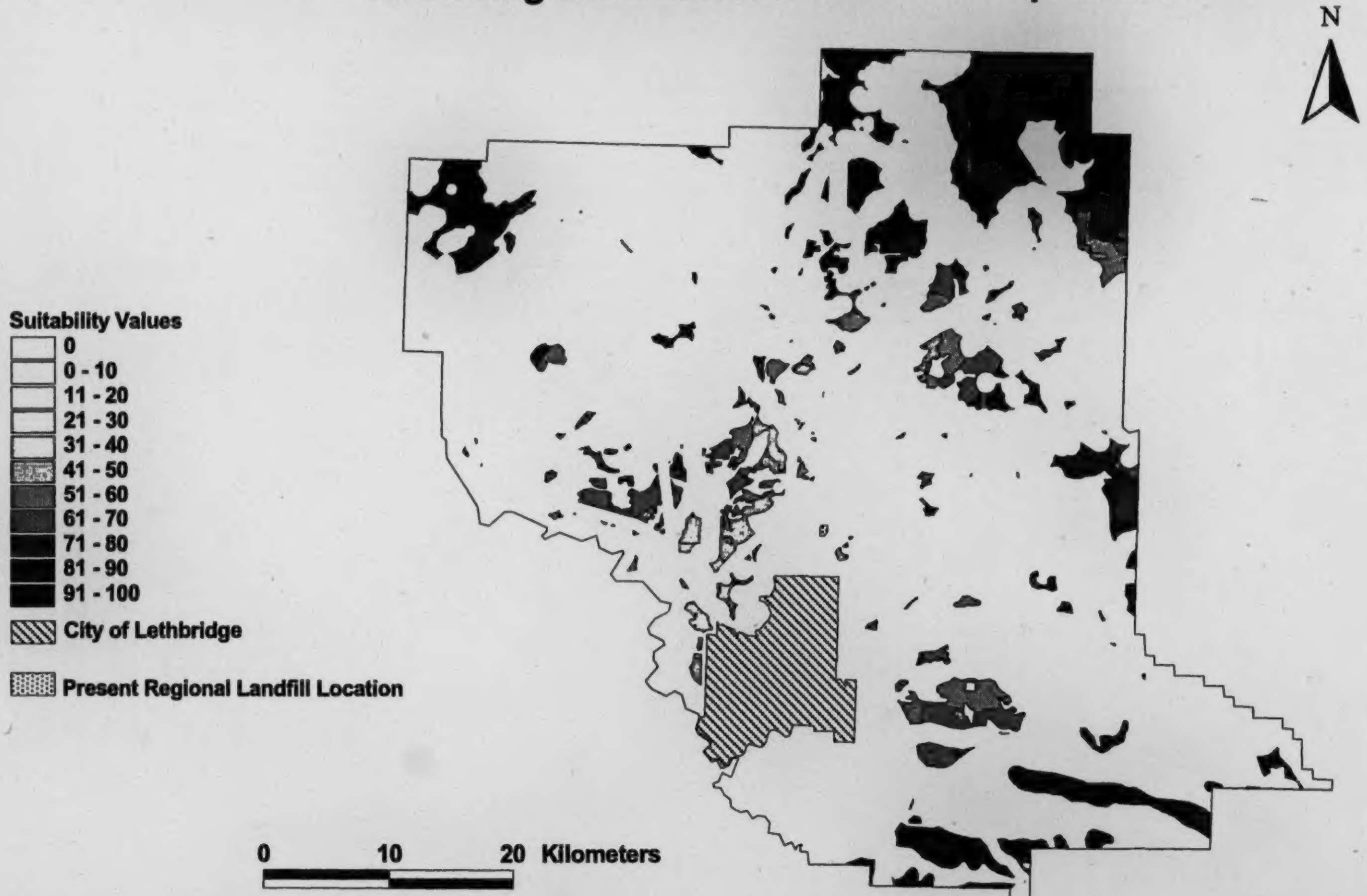

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
City of Lethbridge
Present Regional Landfill Location
0
10
20 Kilometers

Figure F-4 Final Landfill Siting Considering Preventive Measures, without Community Criteria and Using an Absolute Scale for Comparison

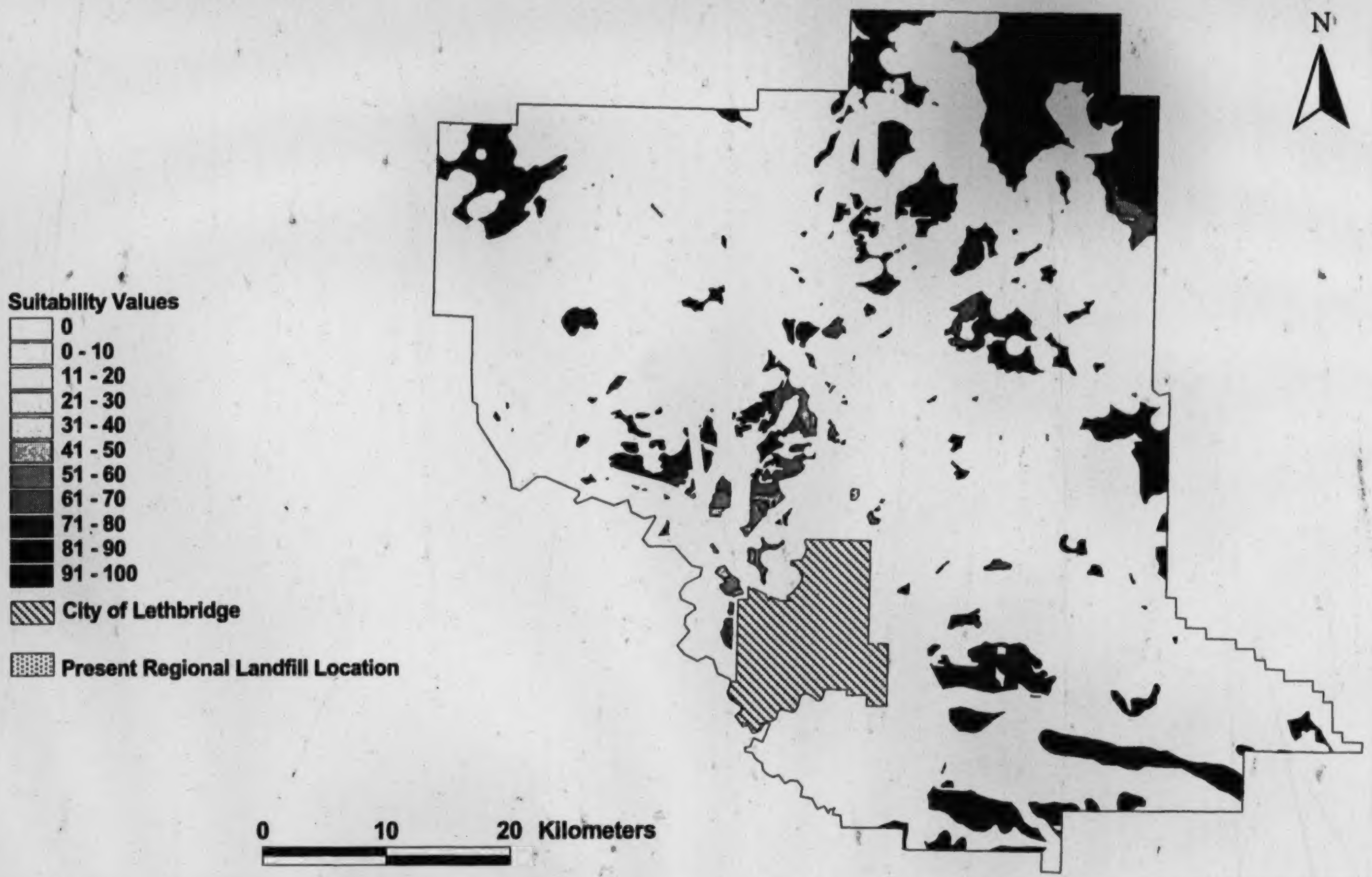

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
City of Lethbridge
Present Regional Landfill Location
0
10
20 Kilometers

Figure F-5 Final Landfill Siting Considering Extreme Preventive Measures and Using an Absolute Scale for Comparison

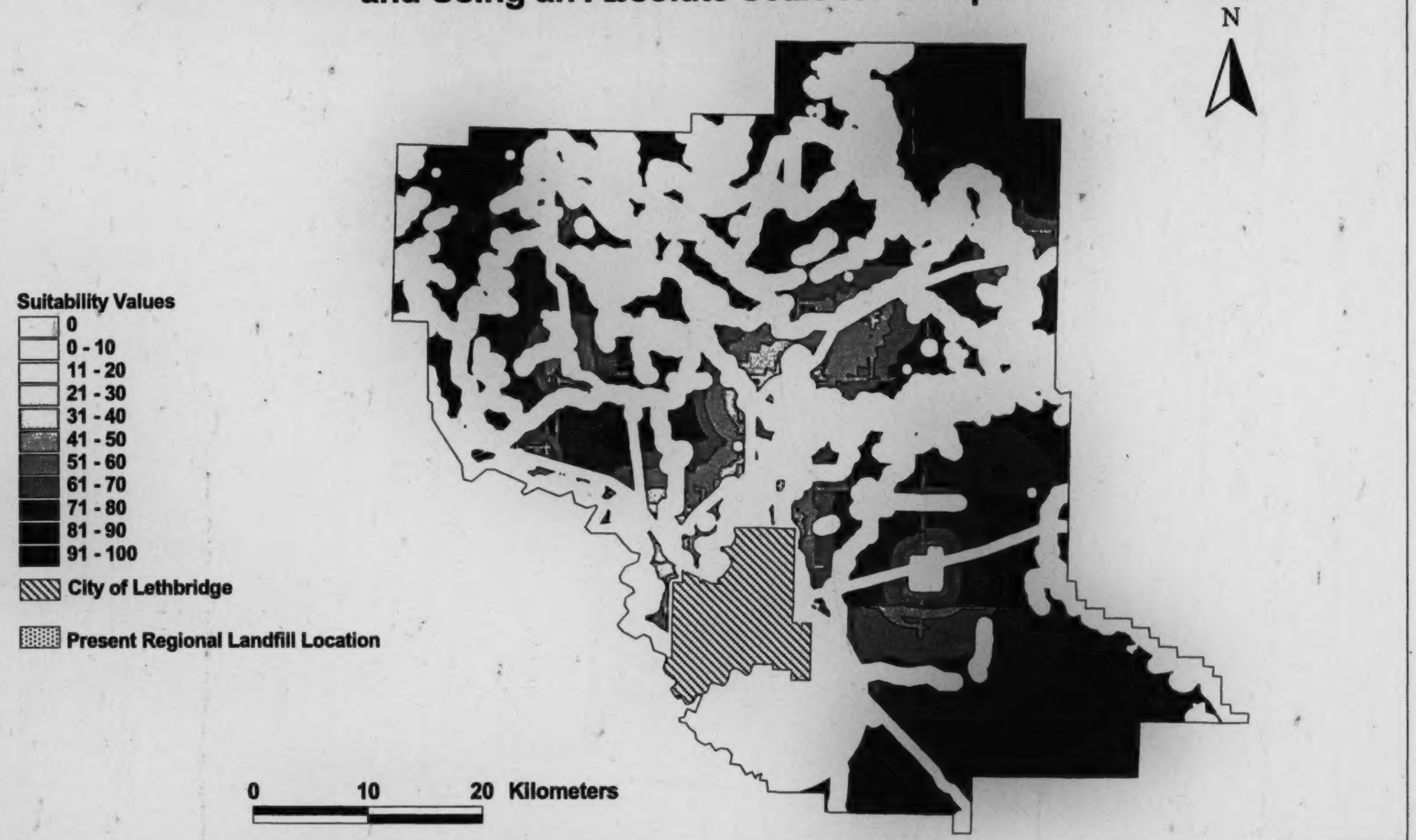

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
City of Lethbridge
Present Regional Landfill Location
0
10
20 Kilometers

Figure F-6 Final Landfill Siting Considering Extreme Preventive Measures, without Community Criteria, and Using an Absolute Scale for Comparison

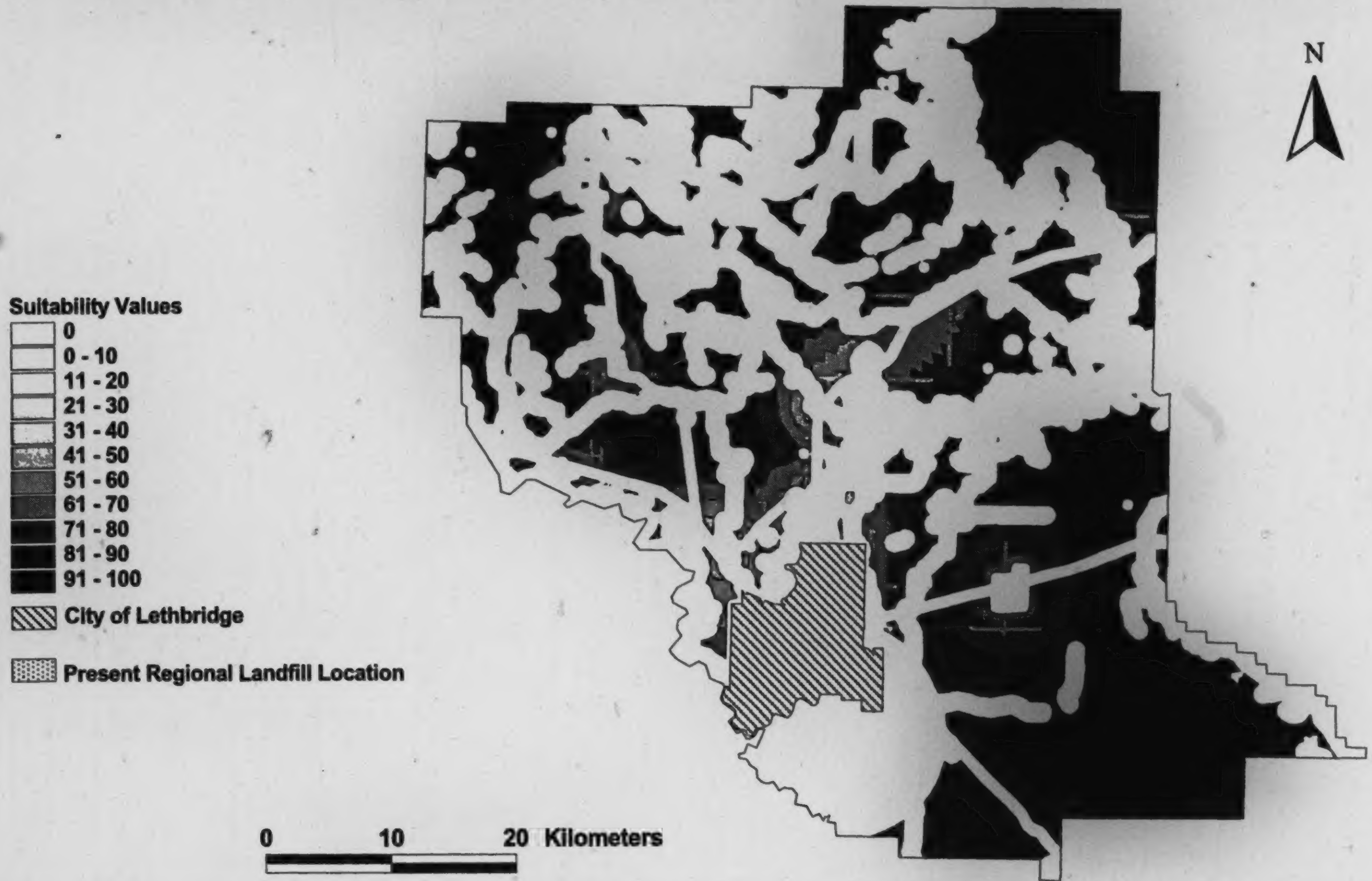

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
City of Lethbridge
Present Regional Landfill Location
0
10
20 Kilometers

Figure F-7 Final Airport Siting Without Mitigation Measures and Using an Absolute Suitability Scale for Comparison Purposes

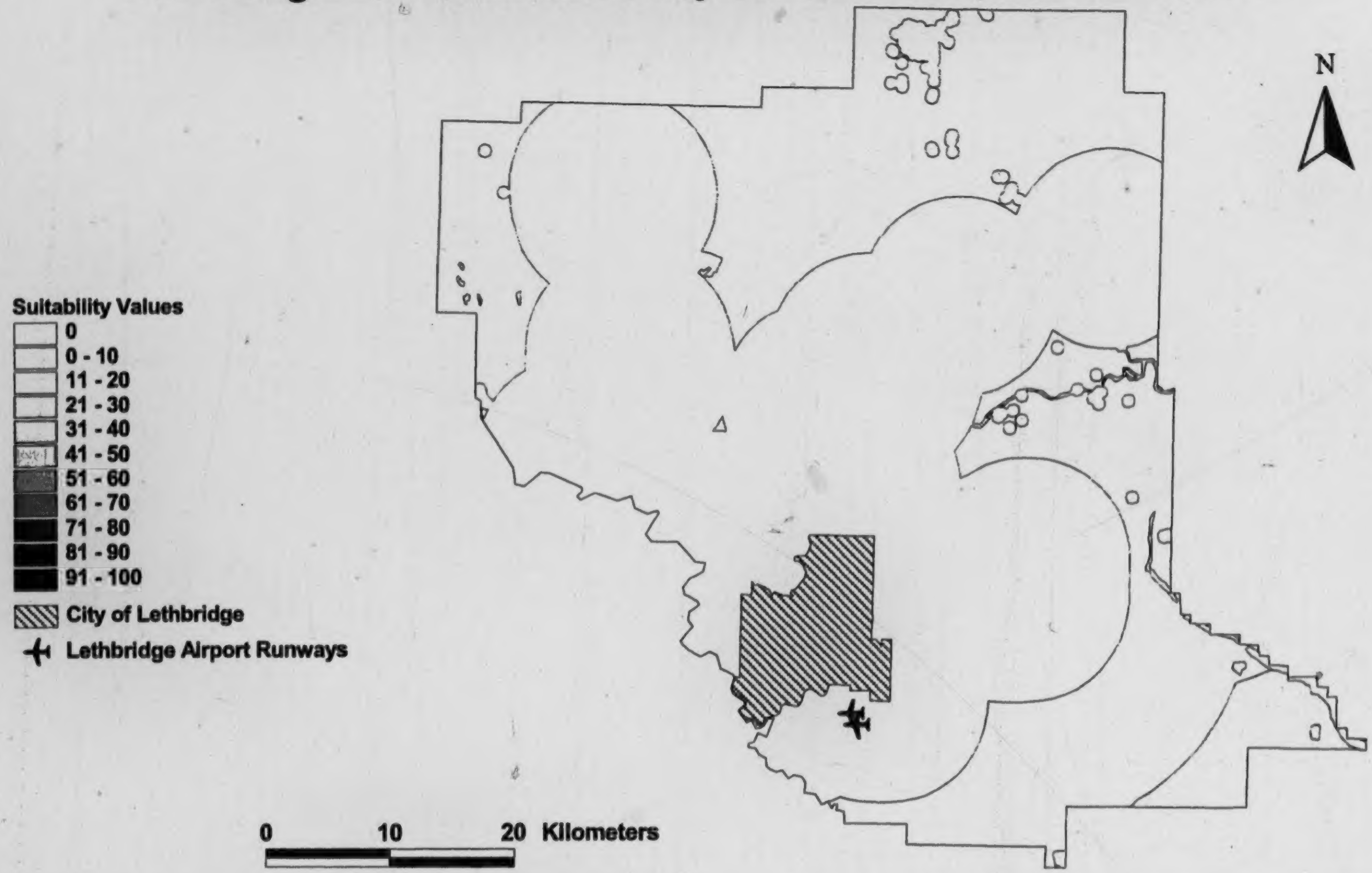

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
City of Lethbridge
Lethbridge Airport Runways
0
10
20 Kilometers

Figure F-8 Final Airport Siting without Mitigation Measures Nor Community Criteria and Using an Absolute Scale for Comparison

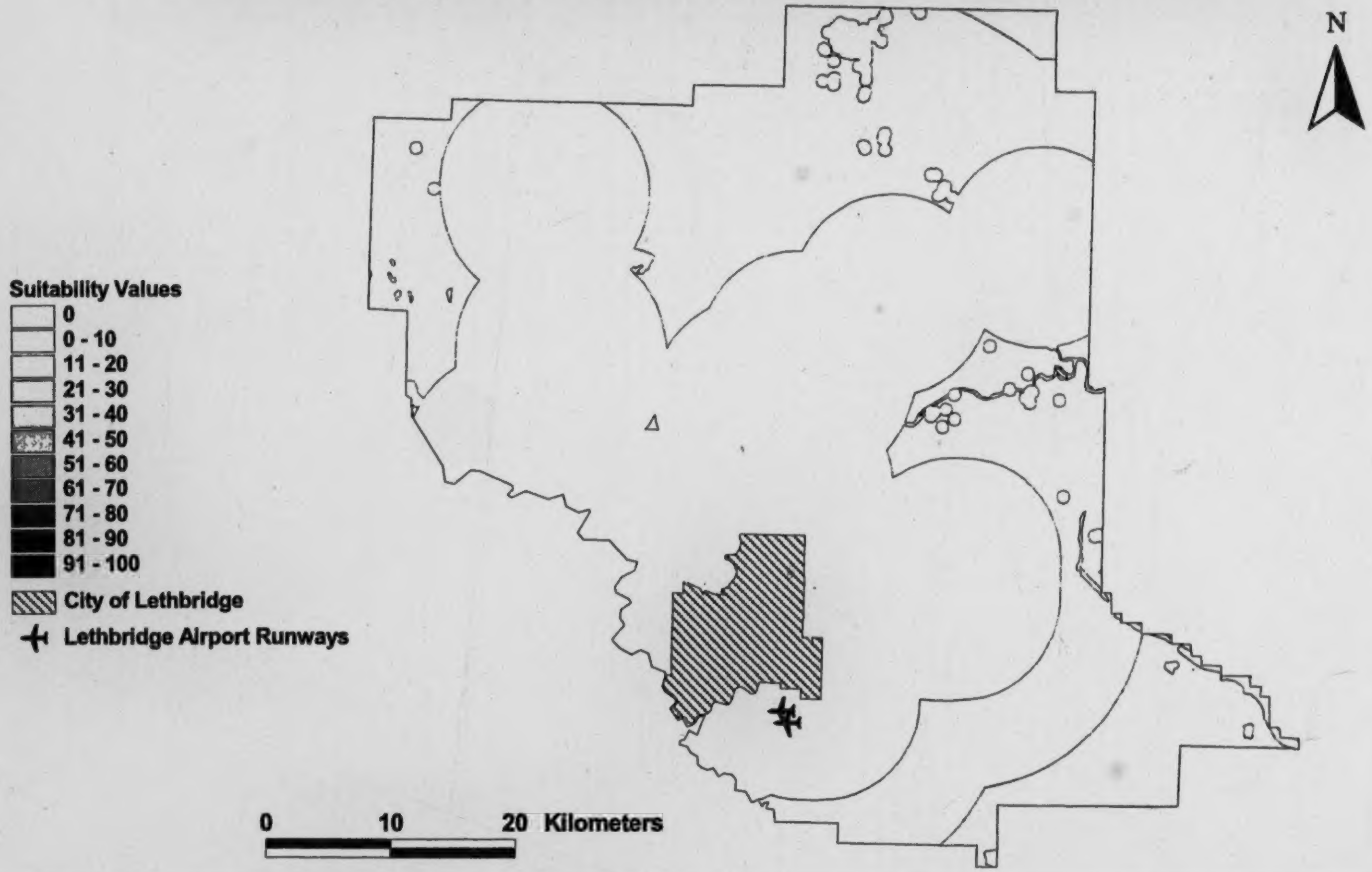

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
City of Lethbridge
Lethbridge Airport Runways
0
10
20 Kilometers

Figure F-9 Final Airport Siting with Preventive Measures and Using and Absolute Suitability Scale for Comparison Purposes

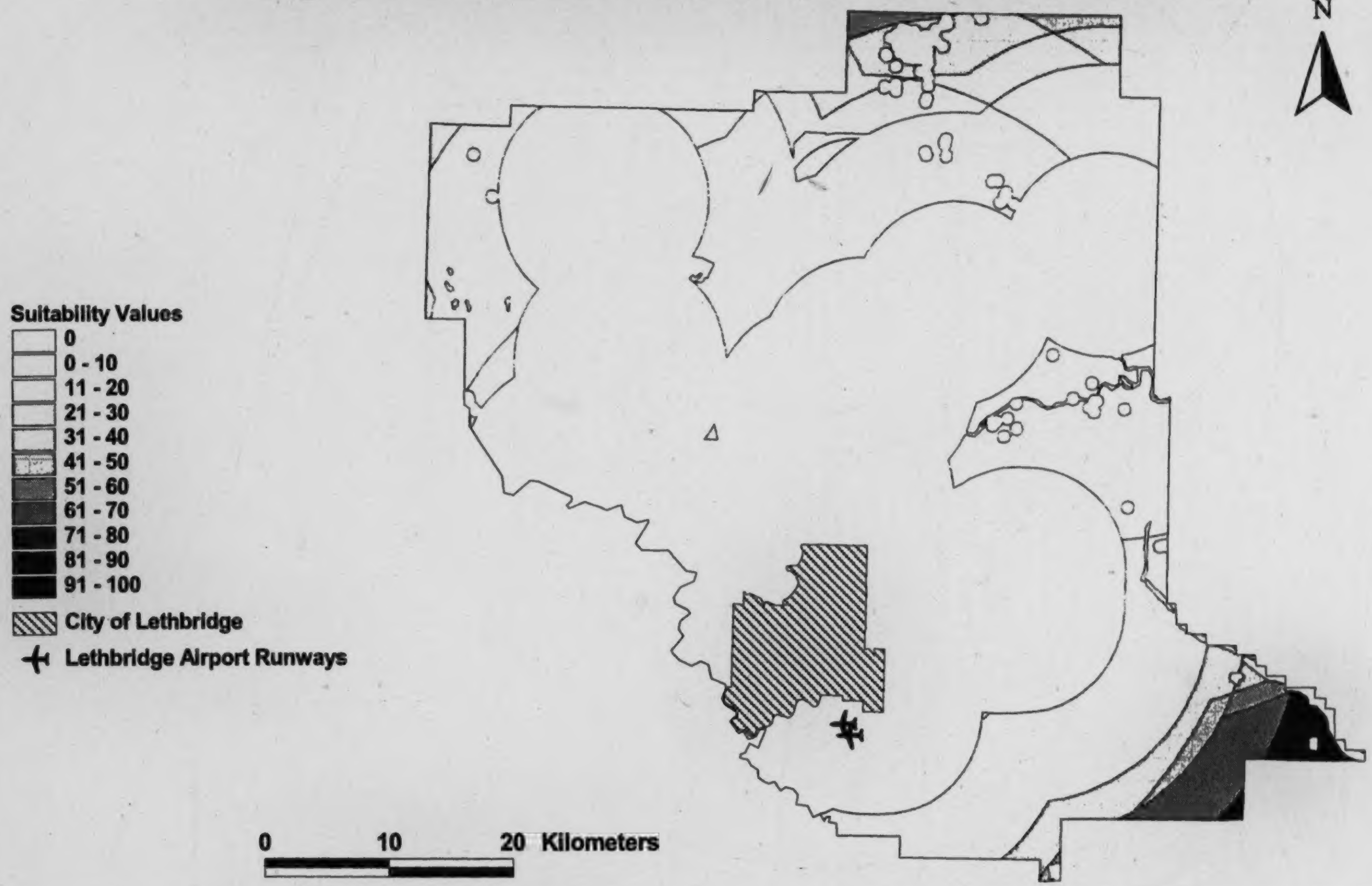

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
City of Lethbridge
Lethbridge Airport Runways
0
10
20 Kilometers

Figure F-10 Final Airport Siting Considering Preventive Measures, with no Community Criteria and Using an Absolute Suitability Scale for Comparison

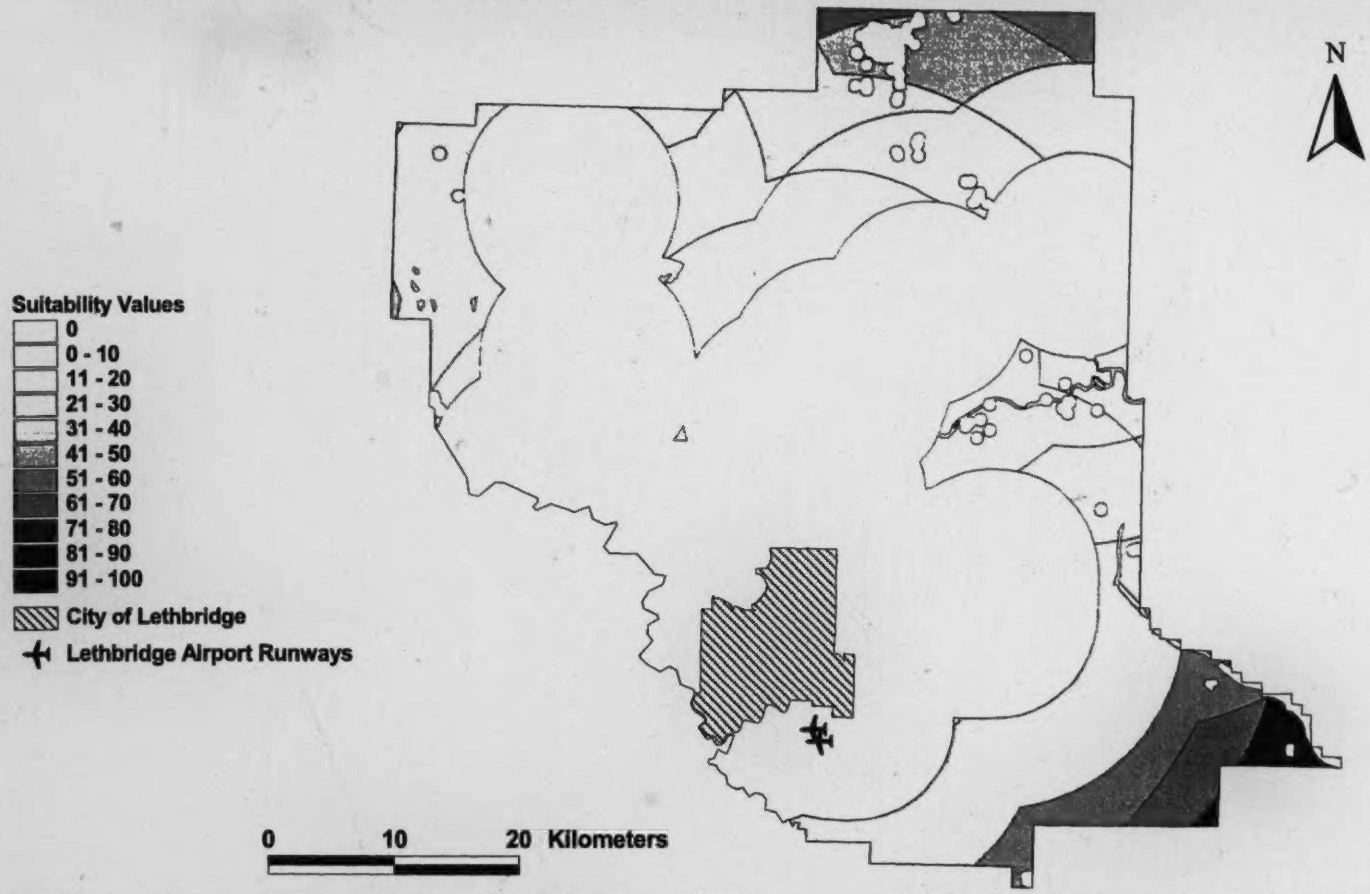

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
City of Lethbridge
Lethbridge Airport Runways
0
10
20 Kilometers

Figure F-11 Final Airport Siting with Extreme Preventive Measures and Using Absolute Suitability Scale for Comparison

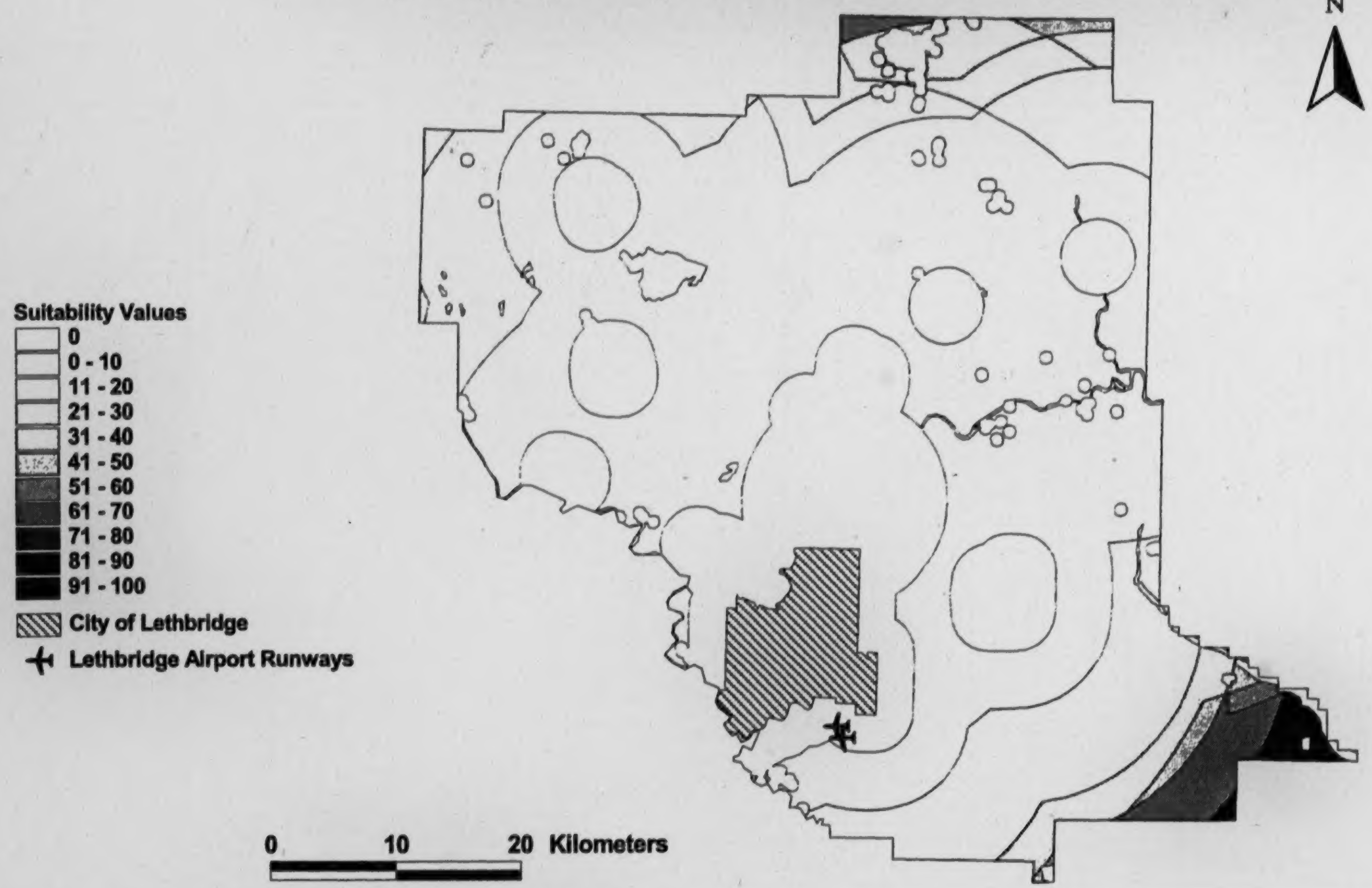
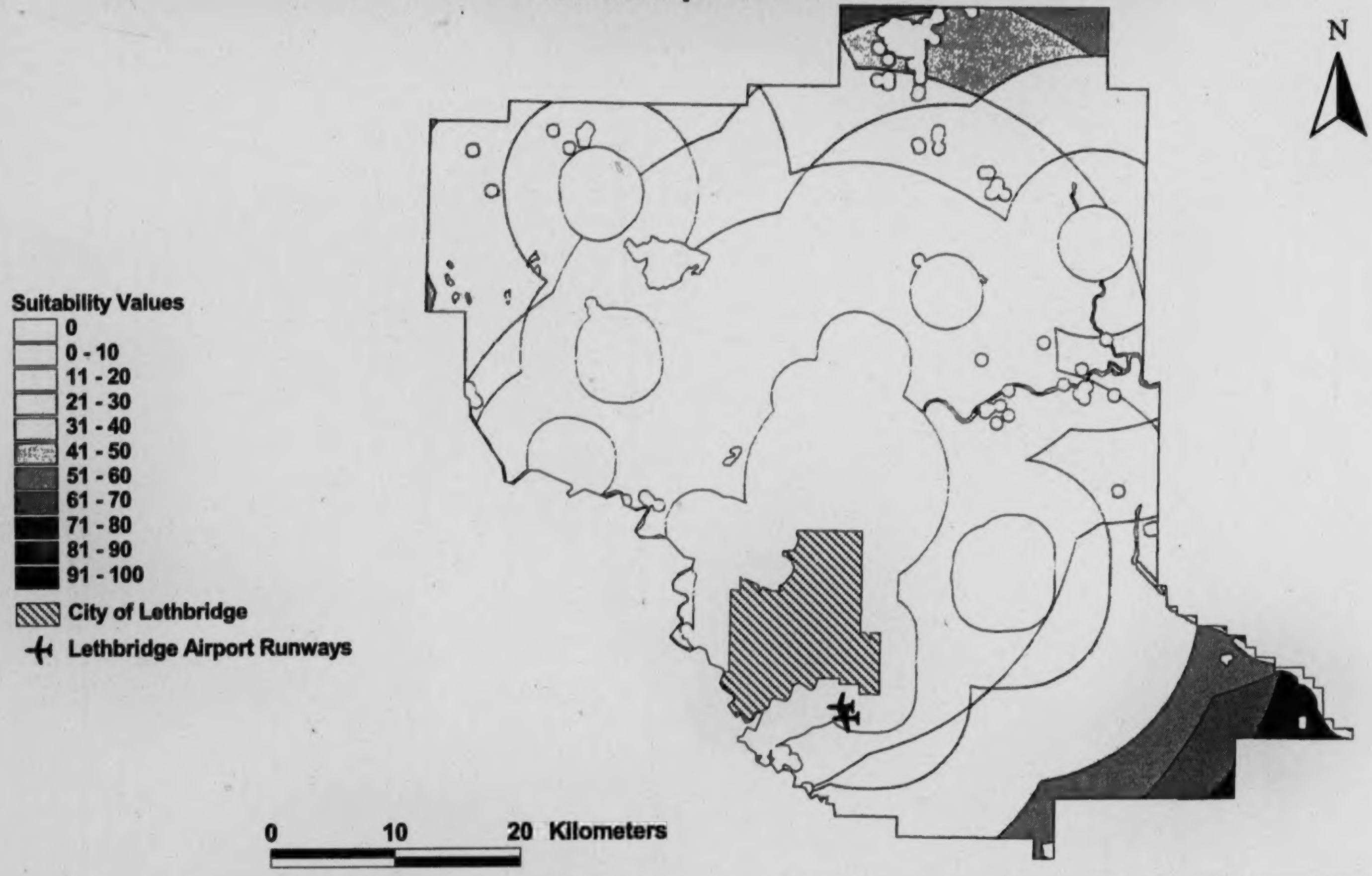

N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
City of Lethbridge
Lethbridge Airport Runways
0
10
20 Kilometers

Figure F-12 Final Airport Siting Considering Extreme Preventive Measures, without Community Criteria and Using and Absolute suitability Value for Comparison


N
Suitability Values
0
0 - 10
11 - 20
21 - 30
31 - 40
41 - 50
51 - 60
61 - 70
71 - 80
81 - 90
91 - 100
City of Lethbridge
Lethbridge Airport Runways
0
10
20 Kilometers

APPENDIX G

Figure G-1 Legal Subdivisions Selected for Final Landfill Siting without Preventive Measures

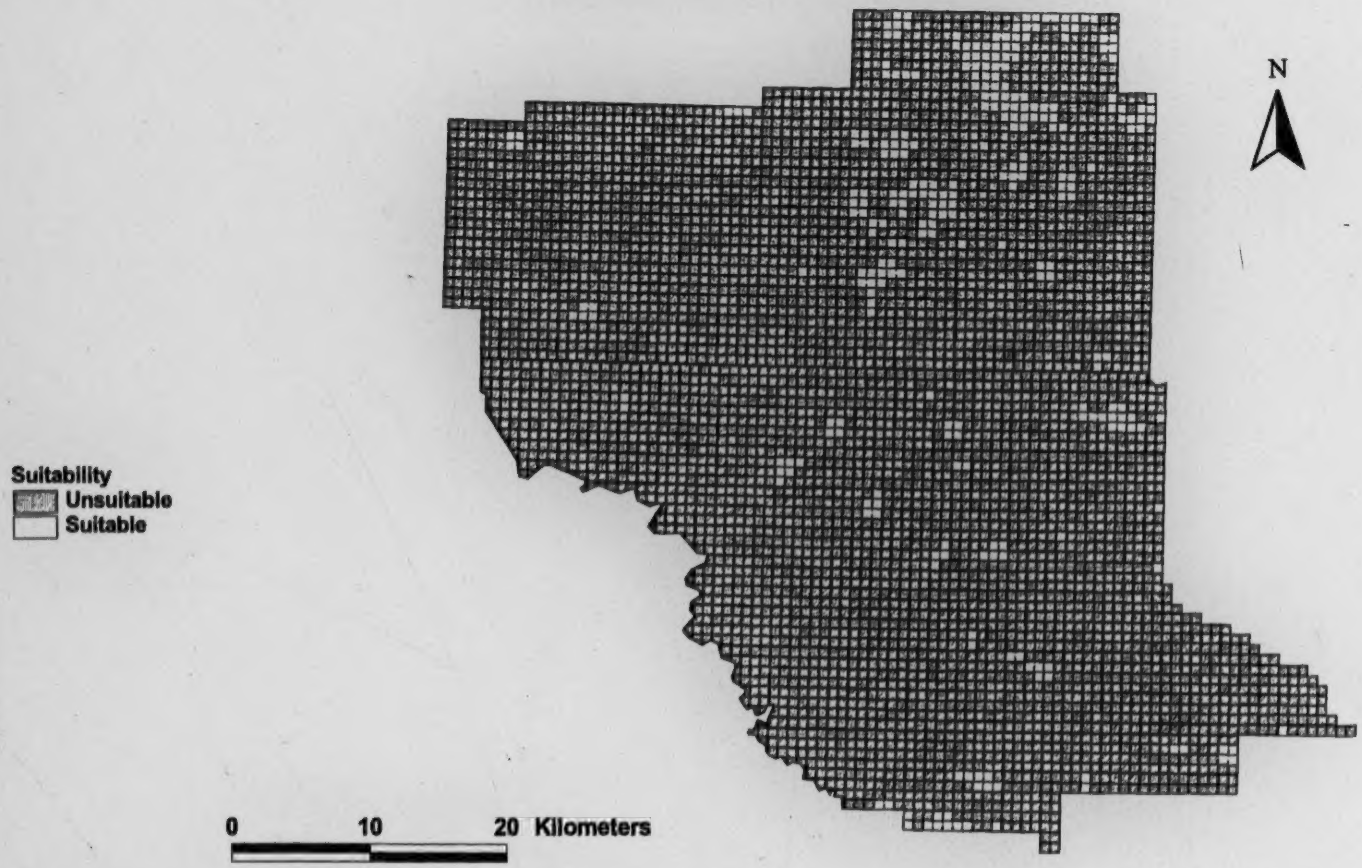

N
Suitability
▨ Unsuitable
☐ Suitable
0
10
20 Kilometers

Figure G-2 Legal Subdivisions Selected for Final Landfill Siting without Preventive Measures, and not Considering Community Criteria

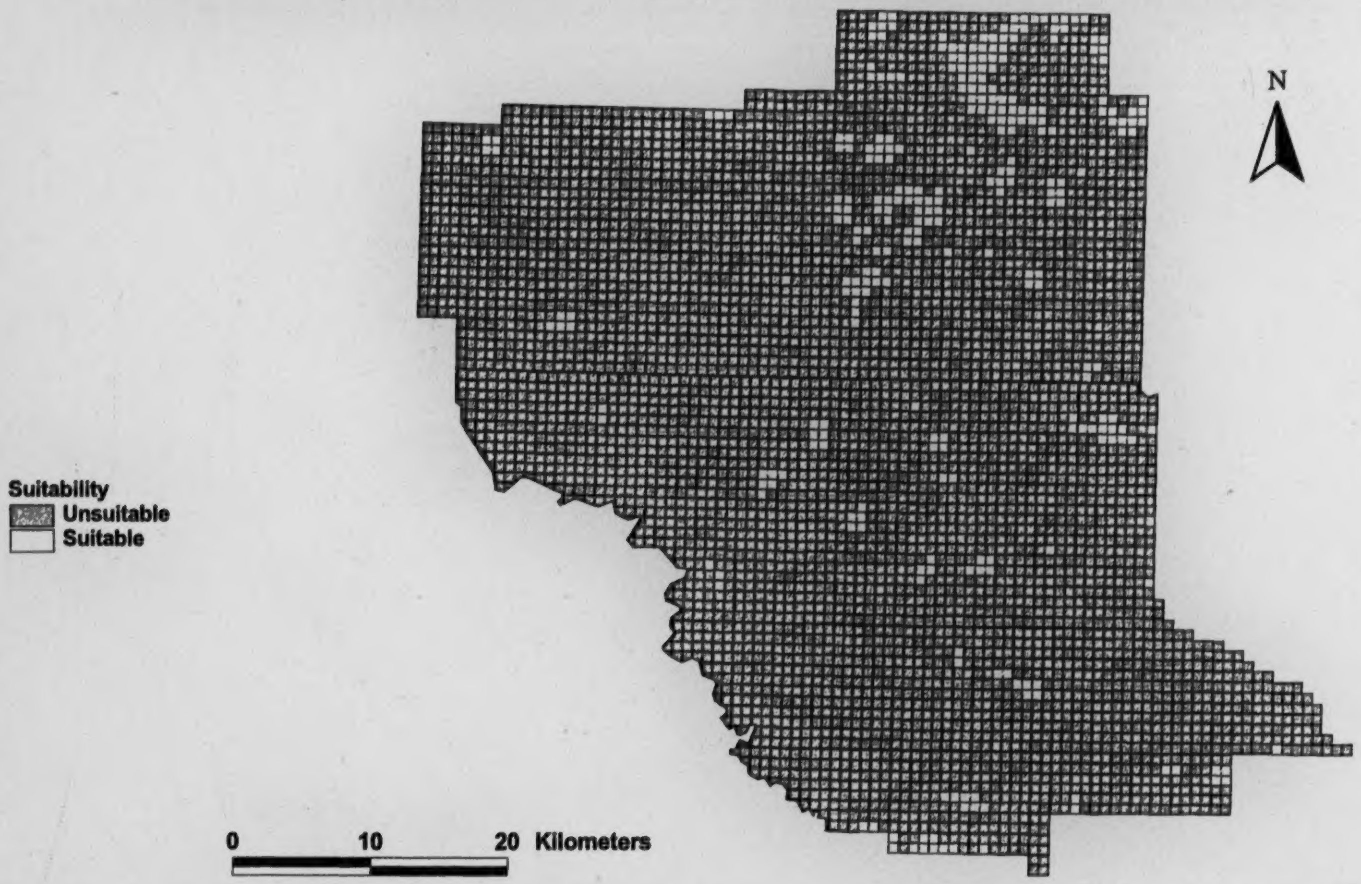

N
Suitability
Unsuitable
Suitable
0
10
20 Kilometers

Figure G-3 Legal Subdivisions for Final Landfill Siting Considering Preventive Measures

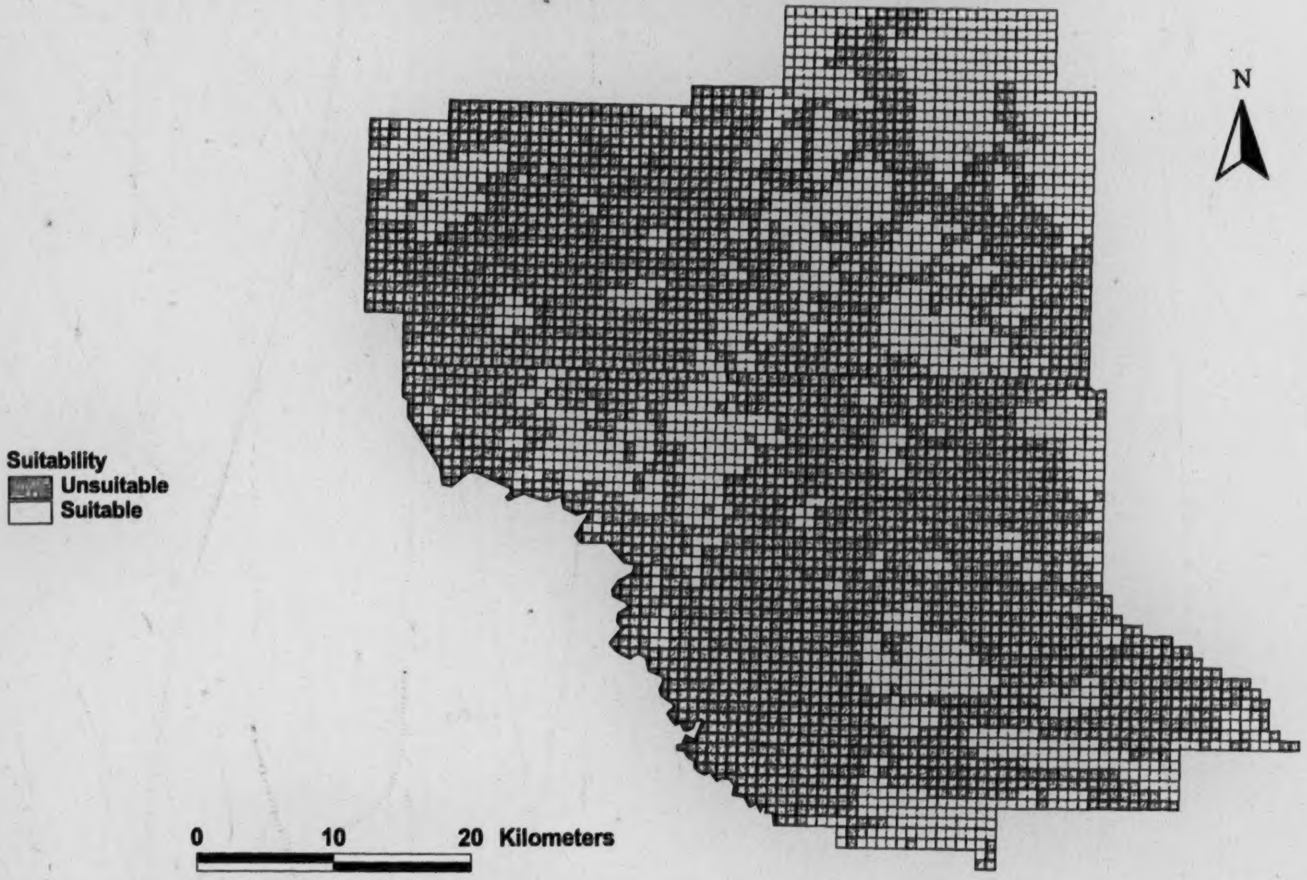

N
Suitability
▨ Unsuitable
☐ Suitable
0
10
20 Kilometers

Figure G-4 Legal Subdivisions Selected for Final Landfill Siting Considering Preventive Measures and without Community Criteria

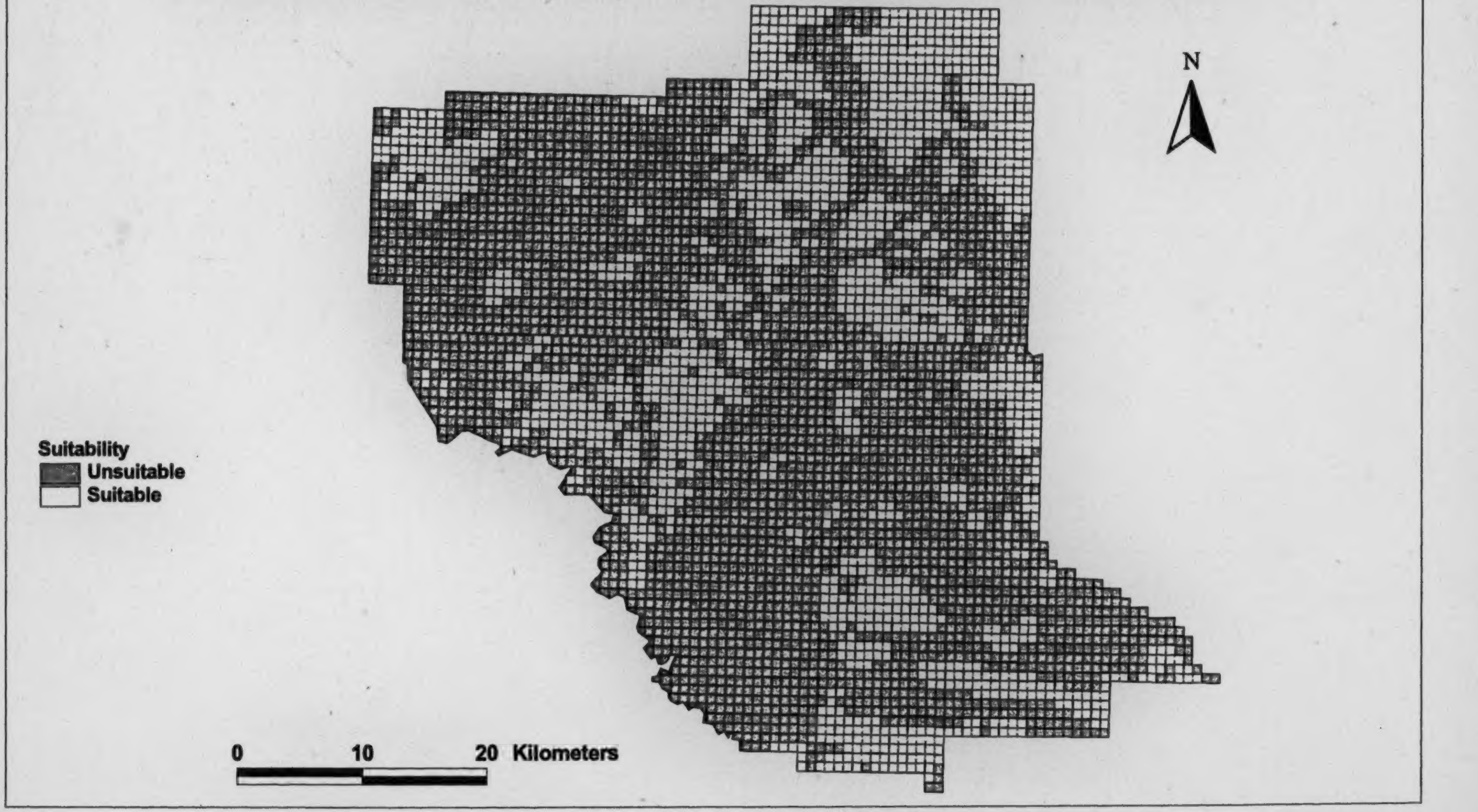

N
Suitability
Unsuitable
Suitable
0
10
20 Kilometers

Figure G-5 Legal Subdivisions Selected for Final Landfill Siting
Considering Extreme Preventive Measures

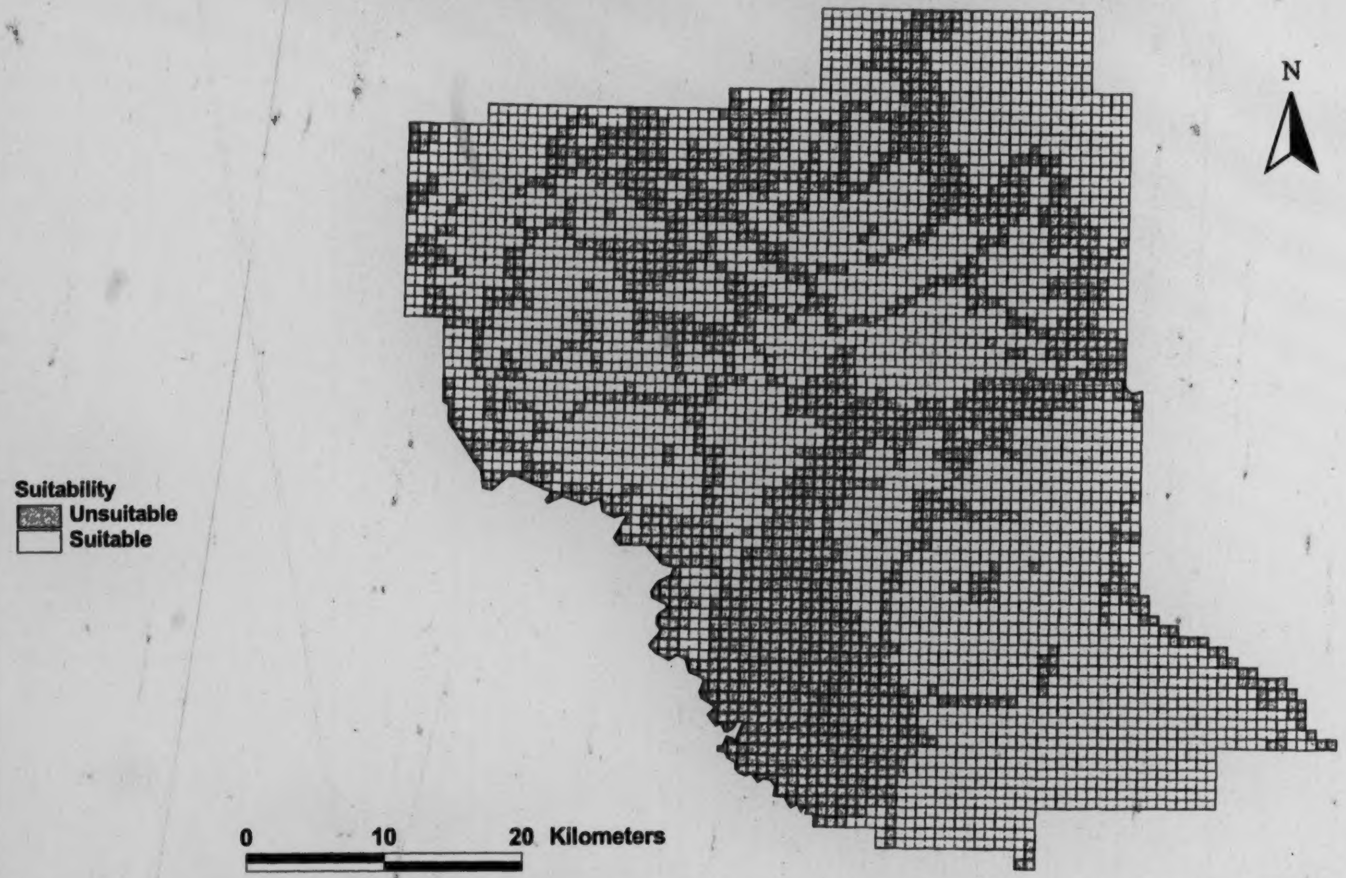

N
Suitability
Unsuitable
Suitable
0
10
20 Kilometers

Figure G-6 Legal Subdivisions Selected for Final Landfill Siting Considering Extreme Preventive Measures and without Community Criteria

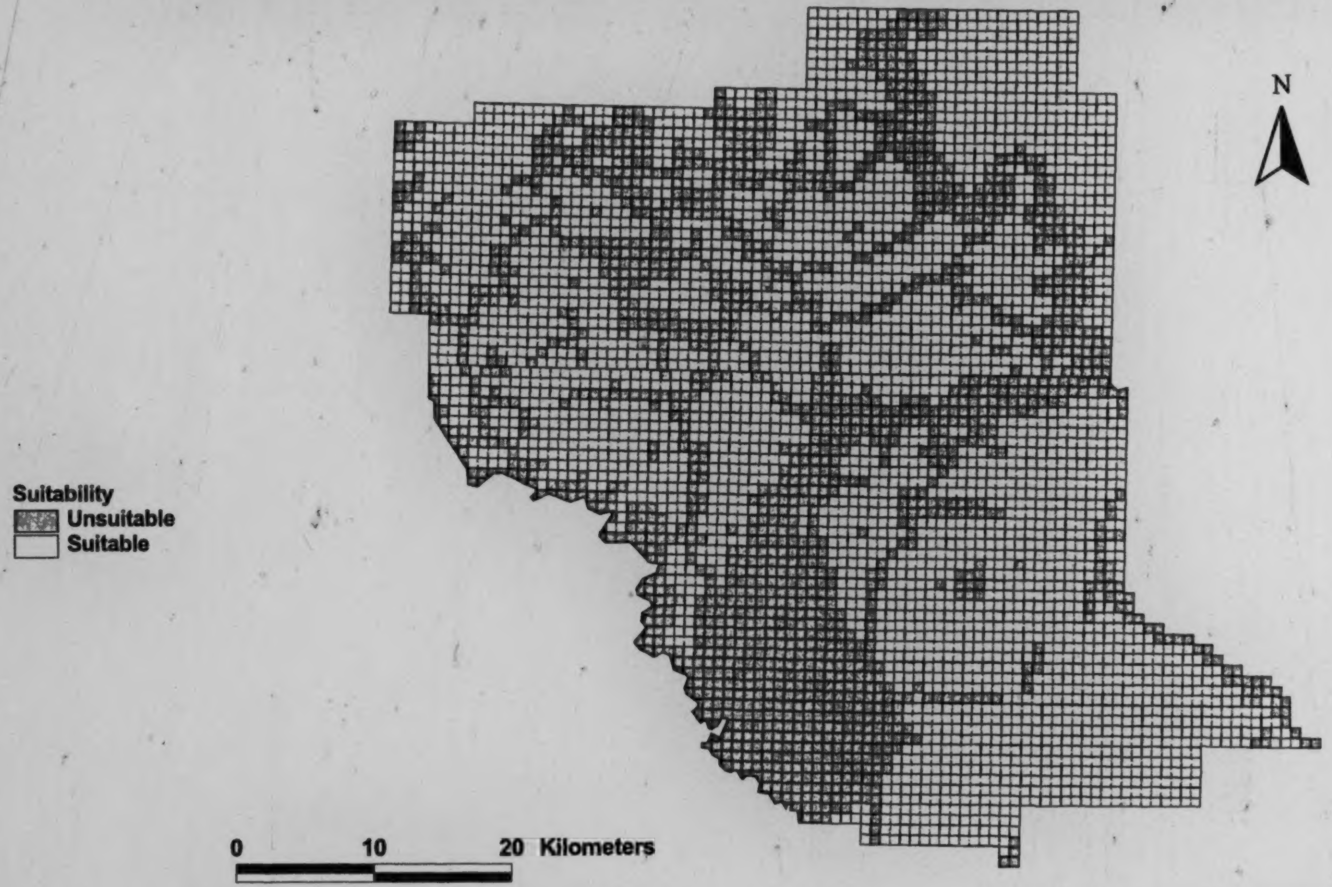

N
Suitability
▨ Unsuitable
☐ Suitable
0
10
20 Kilometers

Figure G-7 Legal Subdivisions Selected for Final Airport Siting without Preventive Measures

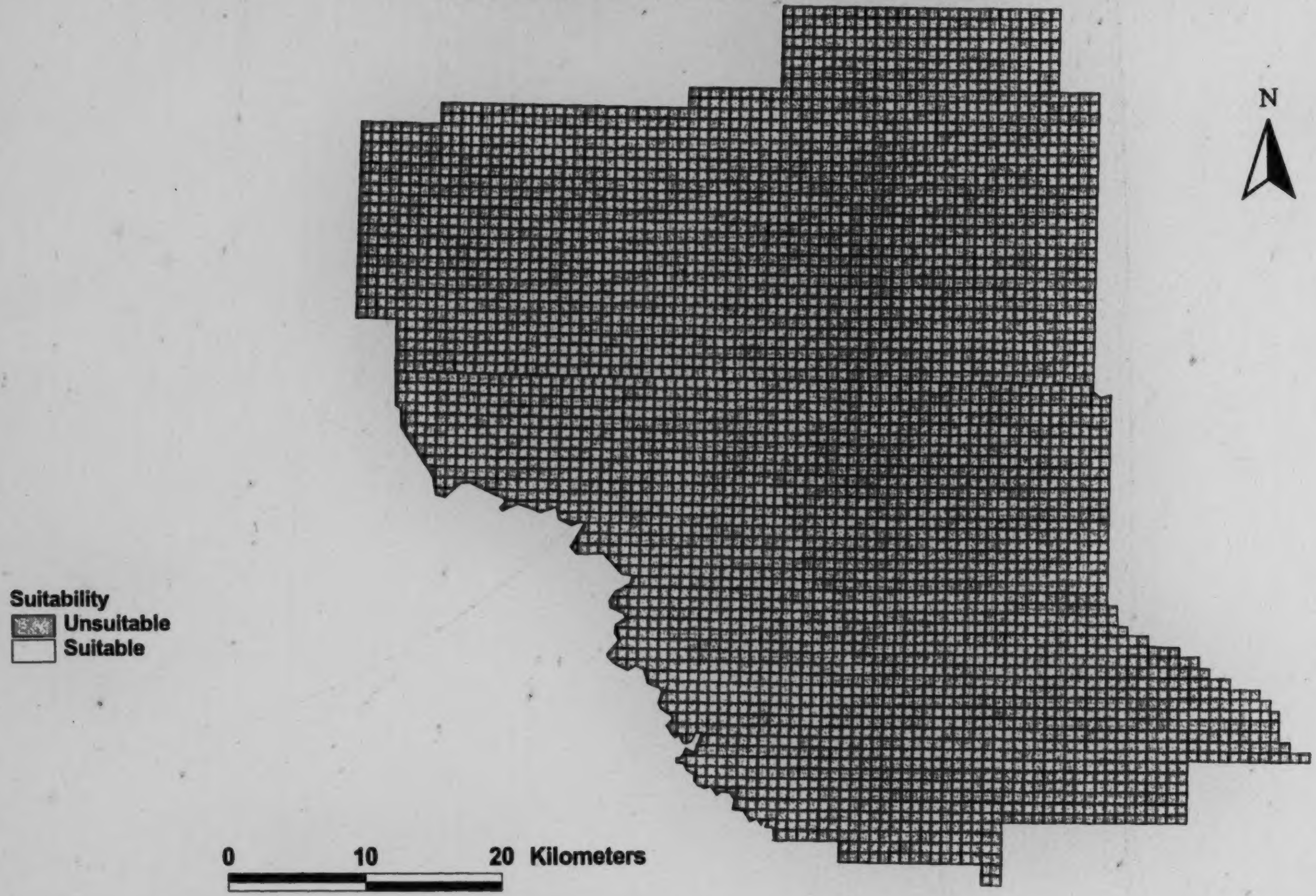

N
Suitability
▨ Unsuitable
☐ Suitable
0
10
20 Kilometers

Figure G-8 Legal Subdivisions Selected for Final Airport Siting without Preventive Measures, and not Considering Community Criteria

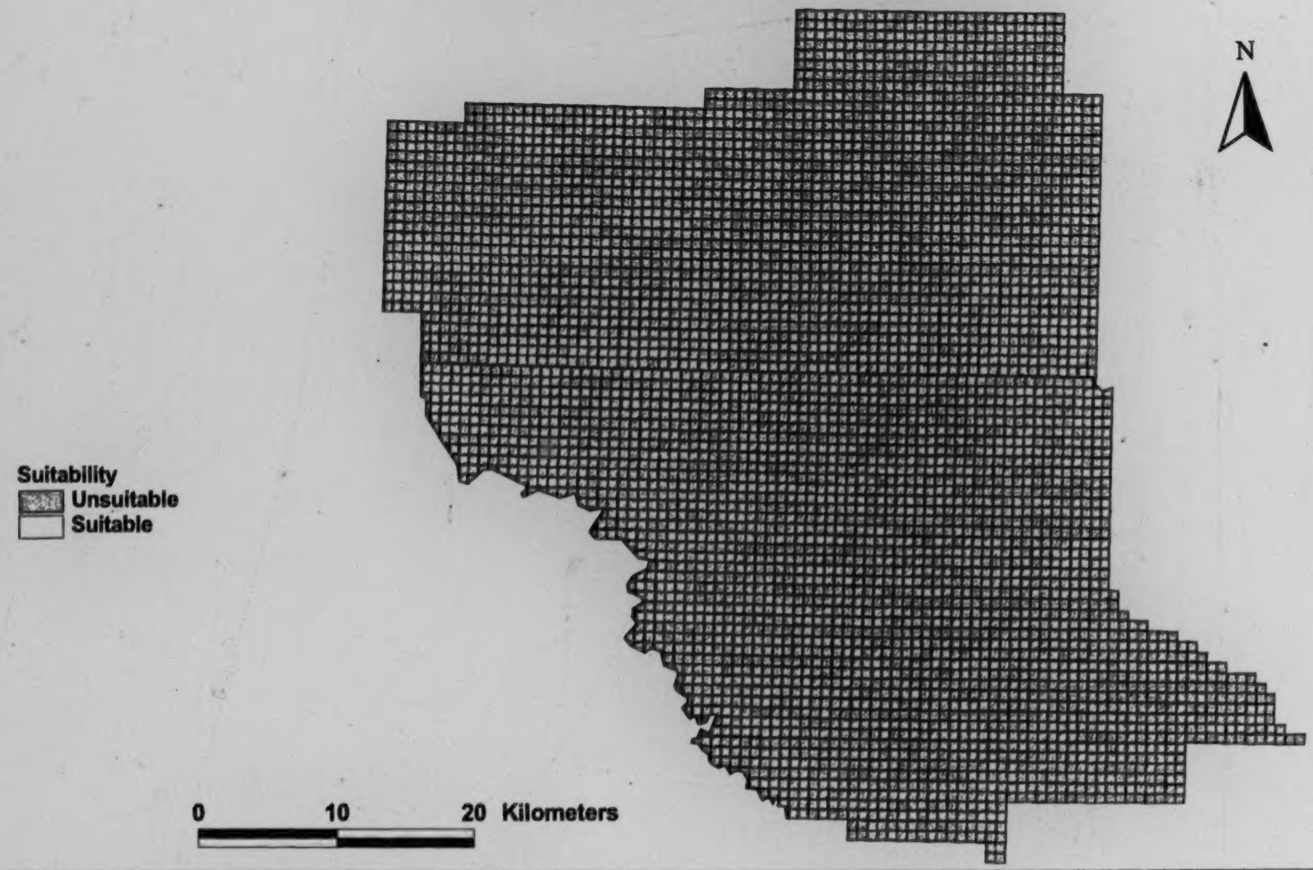

N
Suitability
Unsuitable
Suitable
0
10
20 Kilometers

Figure G-9 Legal Subdivisions Selected for Final Airport Siting Considering Preventive Measures

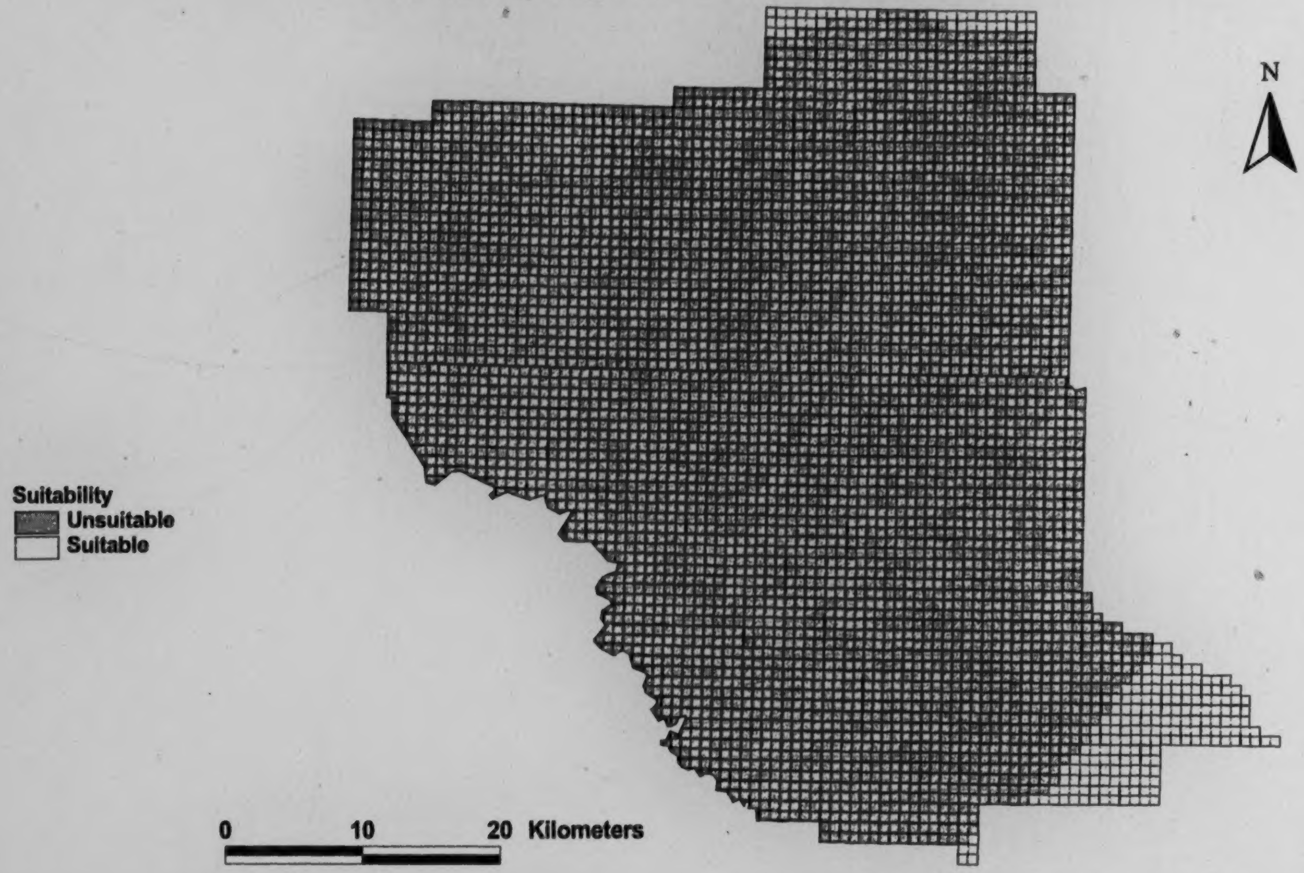

N
Suitability
▨ Unsuitable
☐ Suitable
0
10
20 Kilometers

Figure G-10 Legal Subdivisions Selected for Final Airport Siting Considering Preventive Measures and without Community Criteria

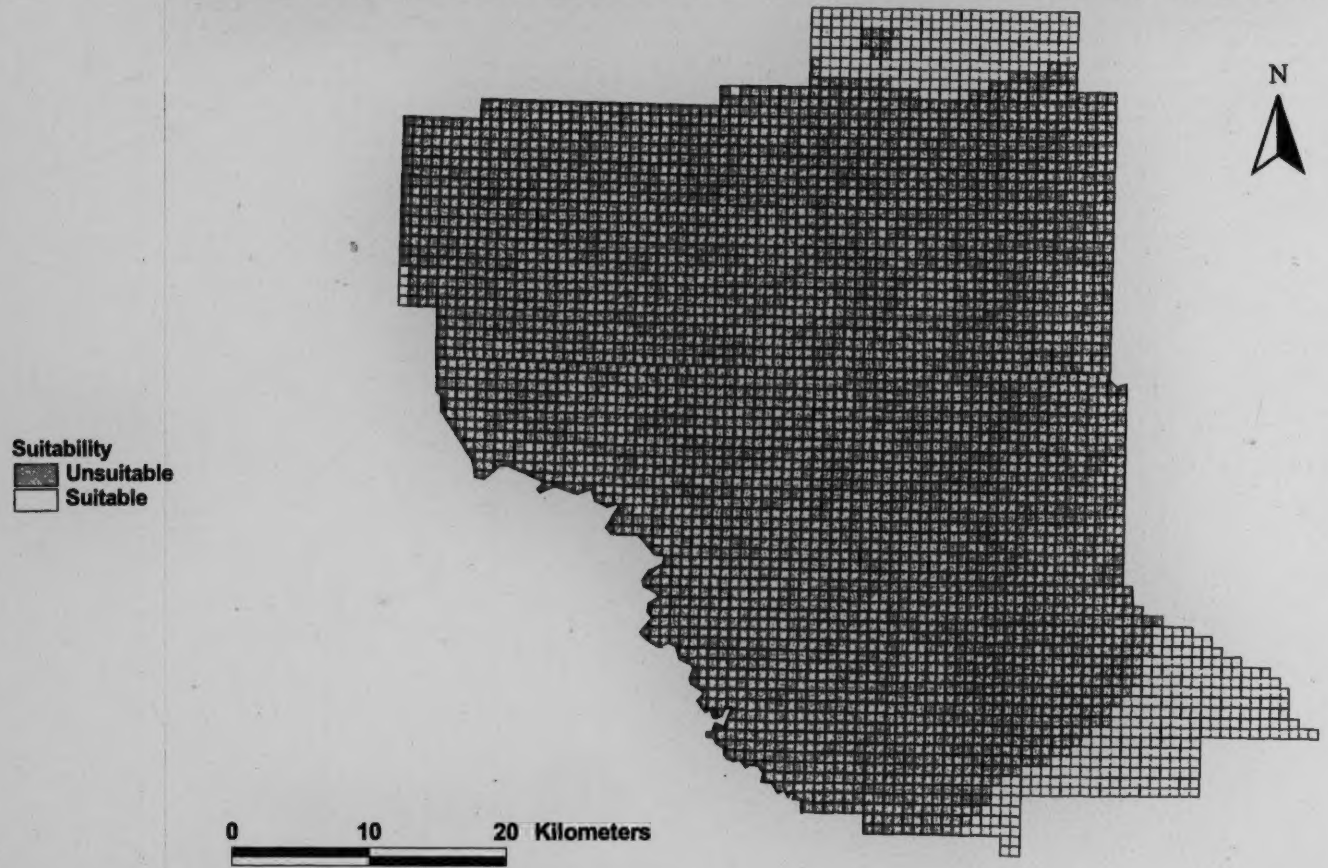

N
Suitability
▨ Unsuitable
☐ Suitable
0
10
20 Kilometers

Figure G-11 Legal Subdivisions Selected for Final Airport Siting Considering Extreme Preventive Measures

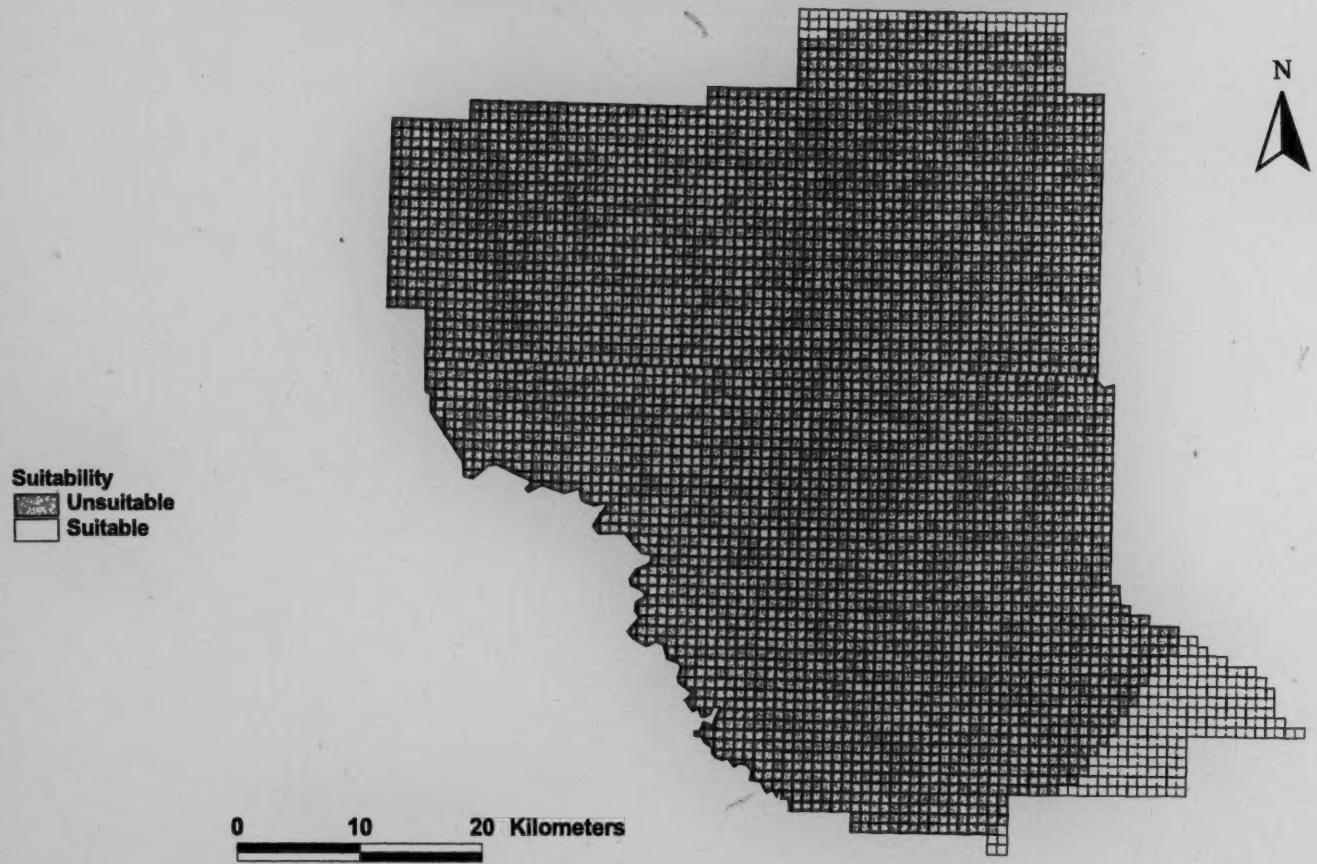
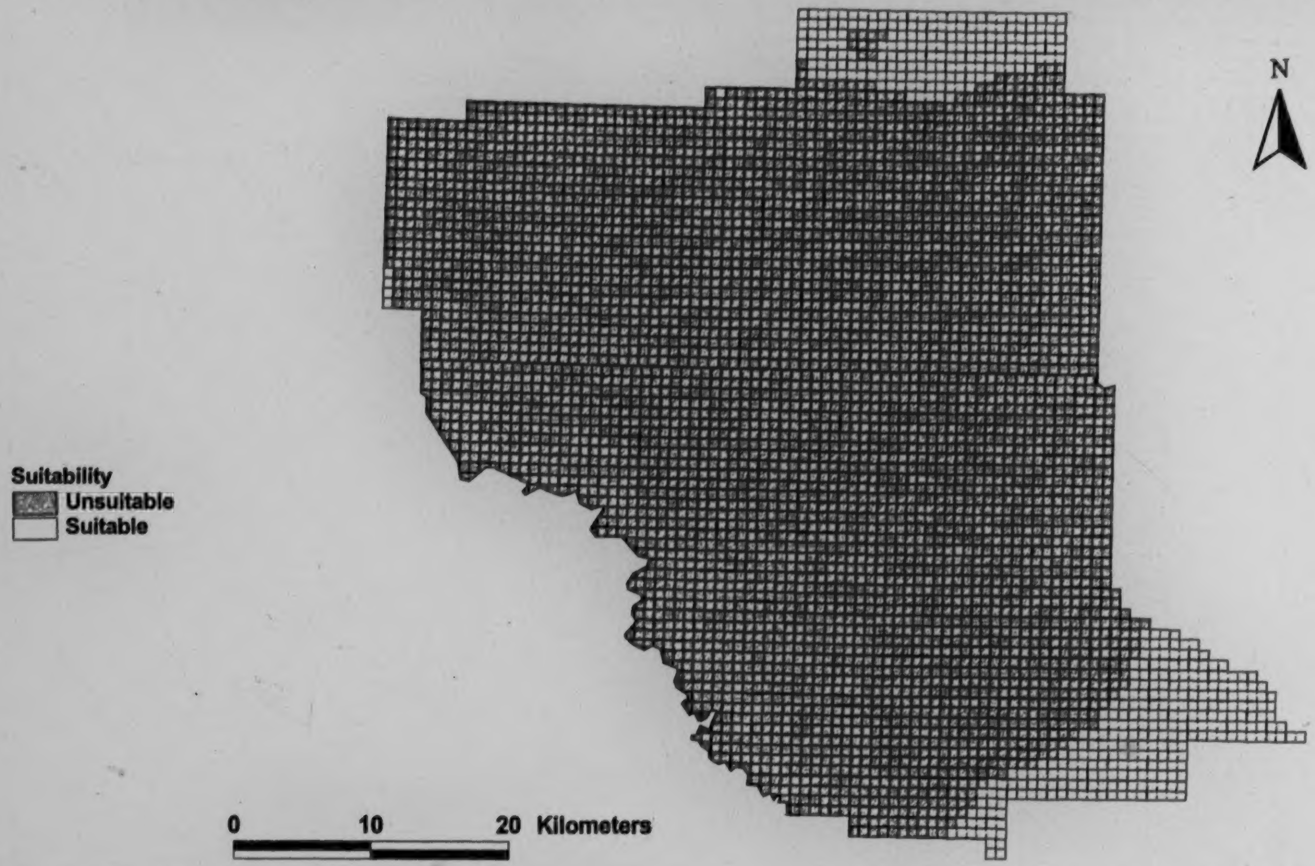

N
Suitability
Unsuitable
Suitable
0
10
20 Kilometers

Figure G-12 Legal Subdivisions Selected for Final Airport Siting Considering Extreme Preventive Measures and without Community Criteria


N
Suitability
Unsuitable
Suitable
0
10
20 Kilometers

APPENDIX H

Table H-1 Available Areas Arranged by Suitability Group Using the Absolute Suitability Scale

Number of Scenario	Type of Scenario	Sutability Scale	TYPE OF FACILITY	
			AIRPORT km^2	LANDFILL km^2
Scenario No.1 (No mitigaton Measures)	With Community Criteria	0	1,878.8	2,980.9
		1-10	1,070.0	0.0
		11 - 20	80.2	0.0
		21 - 30	0.0	0.0
		31 - 40	0.0	0.3
		41 - 50	0.0	1.7
		51 - 60	0.0	2.1
		61 - 70	0.0	3.2
		71 - 80	0.0	18.2
		81 - 90	0.0	19.5
		91-100	0.0	0.0
		Threshold (value of 40)	**0.0**	**44.7**
	Without Community Criteria	0	1,878.8	2,980.9
		1-10	979.7	0.0
		11 - 20	170.5	0.0
		21 - 30	0.0	0.0
		31 - 40	0.0	0.0
		41 - 50	0.0	0.0
		51 - 60	0.0	1.3
		61 - 70	0.0	0.0
		71 - 80	0.0	2.5
		81 - 90	0.0	16.3
		91-100	0.0	23.9
		Threshold (value of 40)	**0.0**	**44.1**
Scenario No.2 (Mitigaton Measures)	With Community Criteria	0	1,878.8	2,549.4
		1-10	424.9	0.0
		11 - 20	459.2	0.0
		21 - 30	47.9	0.3
		31 - 40	105.3	8.6
		41 - 50	24.1	23.5
		51 - 60	15.6	48.4
		61 - 70	50.4	63.2
		71 - 80	0.0	132.7
		81 - 90	0.0	183.8
		91-100	22.9	16.4
		Threshold (value of 40)	**112.9**	**468.0**
	Without Community Criteria	0	1,878.8	2,549.4
		1-10	187.5	0.0
		11 - 20	231.1	0.0
		21 - 30	480.3	0.0
		31 - 40	0.3	0.2
		41 - 50	71.8	3.4
		51 - 60	102.8	15.8
		61 - 70	53.5	30.6
		71 - 80	0.0	580.1
		81 - 90	0.0	126.1
		91-100	22.9	242.7
		Threshold (value of 40)	**251.0**	**998.8**
Scenario No.3 (Extreme Mitigaton Measures)	With Community Criteria	0	849.4	1,700.1
		1-10	1,414.1	0.0
		11 - 20	499.4	0.0
		21 - 30	47.9	0.4
		31 - 40	105.3	7.1
		41 - 50	24.1	29.4
		51 - 60	14.5	109.4
		61 - 70	51.4	166.5
		71 - 80	0.0	361.2
		81 - 90	0.0	427.6
		91-100	22.9	224.6
		Threshold (value of 40)	**112.9**	**1,318.7**
	Without Community Criteria	0	849.4	1,700.1
		1-10	956.3	0.0
		11 - 20	457.4	0.0
		21 - 30	514.6	0.0
		31 - 40	0.3	0.4
		41 - 50	71.8	5.1
		51 - 60	102.8	24.8
		61 - 70	53.5	92.6
		71 - 80	0.0	189.2
		81 - 90	0.0	261.0
		91-100	22.9	753.2
		Threshold (value of 40)	**179.2**	**1,325.9**